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SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

VOLUME VII.

SEVENTH SESSION,

HELD AT CHARLESTON, S. C.,

NOVEMBER 13, 14, AND 15, 1894.

PUBLISHED BY THE ASSOCIATION.

1895.

Entered according to the Act of Congress, in the year 1895, by
THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION,
In the Office of the Librarian of Congress at Washington.

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CONTENTS.

	PAGE
Officers	iii
Members	ix
Constitution	xxiii
By-laws	xxv
Minutes of the Sixth Annual Meeting	xxix

Annual Address of the President—Cornelius Kollock, M.D. . 1
Memorial Address on Dr. Warren Stone. By Albert B. Miles, M.D. 6
Reminiscences of Dr. J. Marion Sims in Paris. By Edmond Souchon, M.D. 27
Gonorrhœa in Women. By J. B. S. Holmes, M.D. . . . 39
Some Cases of Acute Intestinal Obstruction, with Deductions. By A. Morgan Cartledge, M.D. 58
Hernia of the Diaphragm, with Report of a Case. By Floyd W. McRae, M.D. 77
Gunshot Wound of the Spleen and Kidney; Abdominal Section; Hemostasis by Deep Suture; Recovery. By Louis McLane Tiffany, M,D. 83
Treatment of Nævus by Galvano-puncture. By William Perrin Nicolson, M.D. 91
Operation for Complete Perineal Laceration. By Joseph Price, M.D. 98
Observations on the Action of Chloroform on the Functions of the Human Brain and Spinal Cord as Witnessed in Extensive Injuries of the Cranium and Brain. By Bedford Brown, M.D. 112
Hydro-pyonephrosis, with a Case. By Joseph Taber Johnson, M.D 138
Movable Kidney. By George Ben Johnson, M.D. . . . 143
Acute Peritonitis. By Richard Douglas, M.D. 160
The History of Vaginal Hysterectomy. By George J. Engelmann, M.D. 187
A Case of Carcinoma of the Parturient Uterus Removed Three Days After Confinement; Recovery. By George H. Noble, M.D. . 211
Ligation of Arteries. By John A. Wyeth, M.D. 219

PAGE

Simultaneous Appearance of Cancer in Breast and Uterus. By JAMES EVANS, M.D. 234
Clinical Report of Seven Cases of Varicocele Treated by Incision and Shortening of the Scrotum. By W. E. PARKER, M.D. . . 239
Case Report of Fibroid Tumor of the Uterus with Suppurating Ovary Discharging by the Rectum. By RUFUS B. HALL, M.D. . . 235
Some Complicated Cases of Pelvic Surgery. By J. G. EARNEST, M.D. 255
The Removal of an Intra-uterine Fibroid Tumor by Morcellement; without Hemorrhage. By HERBERT M. NASH, M.D. . . 257
Symphysiotomy. By F. E. BALDRIDGE, M.D. 261
Early Operation in Appendicitis, with a Case. By J. MCFADDEN GASTON, M.D. 268
Plastic Operations in Carcinoma of the Breast. By J. T. WILSON, M.D. 279
Subcutaneous Injections of Liquids in Acute Hemorrhage. By T. J. CROFFORD, M.D. 285
The Value of Plastic Work in Operations Involving the Peritoneum. By J. W. LONG, M.D. 289
The Surgical Treatment of Spina Bifida. By HENRY O. MARCY, M.D. 297
A Report of Four Illustrative Abdominal Sections. By L. S. MCMURTRY, M.D. 315
Puzzling Points in Labor. By GEORGE R. DEAN, M.D. . . . 322
Perineo-urethrotomy as the Operation of Election in Deep Strictures of Large Calibre. By G. FRANK LYDSTON, M.D. . . . 328

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Founder.—STONE, ISAAC SCOTT, M.D. Gynecologist to Columbia Hospital; Fellow of the American Association of Obstetricians and Gynecologists; Fellow of the British Gynecological Society; formerly Member of the Medical Examining Board of Virginia. Washington, D.C.

1894.—TALLEY, D. F., M.D. Assistant to Chair of Principles and Practice of Surgery, Birmingham Medical College. Birmingham, Ala.

Founder.—TAYLOR, B. W., M.D. Ex-President of the State Medical Association of South Carolina; ex-President of the Columbia Medical Society. Columbia, S. C.

Founder.—TAYLOR, HUGH M., M.D. President of the Virginia Board of Medical Examiners. Richmond, Va.

1892.—THOMPSON, J. E., M.D. Professor of Surgery in the University of Texas. Galveston, Texas.

1891.—TIFFANY, LOUIS MCLANE, M.D. Professor of Surgery in the University of Maryland; Fellow of the American Surgical Association. *President*, 1895. Baltimore, Md.

1890.—TOMPKINS, CHRISTOPHER, M.D. Professor of Obstetrics in the Medical College of Virginia. Richmond, Va.

1891.—TRIPPE, RICHARD JEFFERSON, M.D. Ex-President of the Chattanooga Medical Society. Chattanooga, Tenn.

1893.—TUCKER, F. H., M.D. President of the Board of Medical Examiners in Second Judicial District of Texas. San Augustine, Texas.

1889.—TUHOLSKE, HERMAN, M.D. Professor of Surgery, Missouri Medical College. St. Louis, Mo.

1891.—VANCE, AP MORGAN, M.D. Fellow of the American Orthopedic Association. Louisville, Ky.

1893.—VANDER VEER, ALBERT, M.D. Professor of Clinical, Didactic and Abdominal Surgery, Albany Medical College; Fellow of the American Surgical Association; ex-President of the American Association of Obstetricians and Gynecologists. Albany, N. Y.

Founder.—VAUGHAN, BOLIVAR A., M.D. Columbus, Miss.

1891.—WALKER, EDWIN, M.D., Ph.D. Gynecologist, Evansville City Hospital; ex-President of the Indiana State Medical

Society; Fellow of the American Association of Obstetricians and Gynecologists. Evansville, Ind.

Founder.—WATHEN, WILLIAM HUDSON, M.D. Professor of Abdominal Surgery, Obstetrics, and Gynecology in the Kentucky School of Medicine; ex-Chairman of the Section on Obstetrics and Diseases of Women, American Medical Association; ex-President of the Kentucky State Medical Society; Consulting Gynecologist to the Louisville City Hospital; Fellow of the American Gynecological Society. Louisville, Ky.

Founder.—WELLFORD, JOHN SPOTSWOOD, M.D. Professor of Diseases of Women and Children, Medical College of Virginia; President of the Richmond Academy of Medicine. Richmond, Va.

1888.—WESTMORELAND, WILLIS F., M.D. Professor of Surgery, Atlanta Medical College. Atlanta, Ga.

1891.—WHEAT, LOUIS, M.D. Richmond, Va.

1890.—WILSON, HENRY PARKE C., M.D. Ex-President of the Medical and Chirurgical Faculty of Maryland and of the Baltimore Academy of Medicine, and of the Baltimore Gynecological and Obstetrical Society; Surgeon to the Hospital for Women, of Maryland; Consulting Gynecologist to St. Agnes Hospital; Consulting Surgeon to the Johns Hopkins Hospital; Fellow of the British Medical Association, and of the British Gynecological Society; ex-President of the American Gynecological Society. Baltimore, Md.

Founder.—WILSON, J. T., M.D. Ex-President of the North Texas Medical Association. *Vice-President*, 1891. Sherman, Texas.

1893.—WOOLF, J. T., M.D. New Orleans, La.

1891.—WYETH, JOHN ALLAN, M.D. Professor of Surgery, New York Polyclinic; Consulting Surgeon to St. Elizabeth Hospital; Visiting Surgeon to Mt. Sinai Hospital and Polyclinic Hospital; Honorary Member of the Texas State Medical Association; ex-President of the New York Pathological Society. New York, N. Y.

CONSTITUTION.[1]

ARTICLE I.

The name of this Association shall be The Southern Surgical and Gynecological Association.

ARTICLE II.

The object of this Association is to further the study and practice of surgery and gynecology among the profession of the Southern States.

ARTICLE III.

This Association shall adopt and conform to the Code of Ethics of the American Medical Association.

ARTICLE IV.

Any reputable physician, who practises surgery or gynecology, and who is vouched for by two members of the Association, and recommended by the Council, shall be eligible to membership in this body.

ARTICLE V.

Section 1. The officers of this Association shall be a President, two Vice-Presidents, a Secretary, a Treasurer, and a Council, elected by ballot, without nomination.

Sec. 2. The President and Vice-Presidents shall be elected for one year, and the President shall not be eligible for re-election at any time; the Secretary and Treasurer, each, for five years; and the Council as provided for in the By-laws.

[1] See minutes of the proceedings for changes in the Constitution and By-laws.

ARTICLE VI.

SECTION 1. It shall be the duty of the President to preside at all meetings of the Association; to give the casting vote; to see that the rules of order and decorum be properly enforced in all deliberations of the Association; to sign the approved proceedings of each meeting, and to approve such orders as may be drawn upon the Treasurer for expenditures ordered by the Association.

SEC. 2. In the absence of the President the first Vice-President shall preside, and in his absence the second Vice-President shall preside.

SEC. 3. In the absence of all three, the Association shall elect one of its members to preside *pro tem.*

SEC. 4. It shall be the duty of the Secretary to keep a true and correct record of the proceedings of the meetings; to preserve all books, papers and articles belonging to the archives of the Association; to attest all orders drawn on the Treasurer for moneys appropriated by the Association by the seal of the Association; to keep the account of the Association with its members; to keep a register of the members, with the dates of their admission and places of residence. He shall collect all moneys due from the members and pay to the Treasurer, taking his receipt for the same. He shall report such unfinished business of previous meetings as may appear on his books requiring action, and attend to such other business as the Association may direct. He shall also supervise and conduct all the correspondence of the Association, and be chairman of the Publishing Committee.

SEC. 5. It shall be the duty of the Treasurer to keep a correct record of all moneys received from the hands of the Secretary, giving his receipt for the same; pay them out by order of the Association as indorsed by the President and attested by the seal in the hands of the Secretary.

SEC. 6. It shall be the duty of the President of the Association to appoint a Committee of Finance, consisting of three members of the Association, whose duty it shall be to examine the books of the Secretary and Treasurer, and report on the same at the next session of the Association.

ARTICLE VII.

Vacancies occurring in the officers of the Association shall be filled by appointment of the President until the next meeting. He shall also have the appointment of all committees not otherwise provided for.

ARTICLE VIII.

This Constitution shall take effect immediately from the time of its adoption, and shall not be amended except by a written resolution, which shall lie over one year, and receive a vote of two-thirds of the members present.

ARTICLE IX.

Any member who for three consecutive years fails to attend the meetings shall be dropped from the roll of membership.

BY-LAWS.

ARTICLE I.

The Southern Surgical and Gynecological Association shall meet annually on the second Tuesday of November at 10 A.M., at such place as may be designated by the preceding meeting.

ARTICLE II.

The members present shall constitute a quorum for business.

ARTICLE III.

The annual dues of each member shall be $10, paid in advance.

ARTICLE IV.

The usual parliamentary rules governing deliberative bodies shall govern the business workings of this Association.

ARTICLE V.

All questions before the Association shall be determined by a majority of the votes present.

ARTICLE VI.

The President shall deliver an annual address at each meeting of the Association.

ARTICLE VII.

The Secretary of the Association shall receive, at each annual Session, a draft from the President, drawn on the Treasurer, for the sum of $100 for services rendered the Association, and to this shall be added the necessary expense incurred in the discharge of his official duties.

ARTICLE VIII.

It shall be the duty of the Secretary, one month prior to the annual meeting, to notify by circular letters the members of the Association, and urge their attendance.

ARTICLE IX.

The authors of all essays shall notify the Secretary, six weeks prior to the meeting, of the titles of their essays, so that they may be incorporated in the circular letter to the members.

ARTICLE X.

COUNCIL.

The Council shall consist of five members; and of those elected at the primary meeting, the first shall serve five years, the second four, the third three, the fourth two, and the fifth one year; so

that subsequently one member of the Council shall be elected annually to serve five years. The President and Secretary shall be *ex-officio* members of the Council.

This Council shall organize by electing a Chairman and Secretary, and shall keep a record of its proceedings.

The duties of this Council shall be—

1. To investigate applications for membership and report to the Association the names of such persons as are deemed worthy.

2. To take cognizance of all questions of an ethical, judicial, or personal nature, and upon these the decision of the Council shall be final; *provided*, that appeal may be taken from such decision of the Council to the Association, under a written protest, which protest shall be sustained by the Association, and the matter shall then be referred to a special committee, with power to take final action.

3. All motions and resolutions before the Association shall be referred to the Council without debate, and it shall report by recommendation at as early an hour as possible.

ARTICLE XI.

The following are the standing committees of the Association to be filled by the President and to report at the next annual meeting subsequent to their appointment, viz.: Committee of Arrangements and Committee of Publication. The Committee of Publication shall consist of three members, one of whom, the Secretary of the Association, shall also be the chairman of the said committee. The Committee of Arrangements shall consist of five members.

ARTICLE XII.

The Committee of Publication shall have full power to omit from the published TRANSACTIONS, in part or in whole, any paper that may be referred to it by the Association, unless specially instructed to the contrary by the Association, which will be determined by vote.

ARTICLE XIII.

No honorary members shall be placed upon the roll of this Association.

ARTICLE XIV.

Any member failing to pay his dues for more than one year shall be dropped.

ARTICLE XV.

Every physician making application for membership shall present with his application a paper on some surgical or gynecological subject.

ARTICLE XVI.

No paper shall be read before this Association which does not deal strictly with a subject of surgical or gynecological importance.

ARTICLE XVII.

No paper read before the Association shall be published in any medical journal or pamphlet for circulation, as having been read before the Association, without having received the indorsement of the Committee of Publication.

ARTICLE XVIII.

The reading of papers shall be limited to twenty minutes each, except by permission of the Association.

MINUTES OF THE PROCEEDINGS

AT THE

SEVENTH ANNUAL MEETING

OF

THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION,

HELD IN

ARTILLERY HALL,

Charleston, S. C.,

NOVEMBER 13, 14, AND 15, 1894.

SEVENTH ANNUAL MEETING.

The following named members were present:

BAXTER, GEO. A.	Chattanooga, Tenn.
BROWN, B.	Alexandria, Va.
BUIST, J. S.	Charleston, S. C.
CARTLEDGE, A. M.	Louisville, Ky.
CUNNINGHAM, R. M.	Birmingham, Ala.
DAVIS, JOHN D. S.	Birmingham, Ala.
DAVIS, WM. E. B.	Birmingham, Ala.
DOUGLAS, RICHARD	Nashville, Tenn.
EARNEST, J. G.	Atlanta, Ga.
ENGELMANN, GEO. J.	St. Louis, Mo.
EVANS, JAS.	Florence, S. C.
GRIFFITHS, GEO. W.	Louisville, Ky.
HAGGARD, W. D.	Nashville, Tenn.
HALL, RUFUS B.	Cincinnati, O.
HENRY, JOHN T.	Chester, S. C.
HOLMES, J. B. S.	Atlanta, Ga.
JOHNSON, JOS. T.	Washington, D. C.
JOHNSTON, GEO. BEN	Richmond, Va.
KOLLOCK, C.	Cheraw, S. C.
LEWIS, ERNEST S.	New Orleans, La.
McGUIRE, HUNTER H.	Richmond, Va.
McRAE, F. W.	Atlanta, Ga.
NASH, H. M.	Norfolk, Va.
NICOLSON, WM. P.	Atlanta, Ga.
NOBLE, GEO. H.	Atlanta, Ga.
PARKER, WM. E.	New Orleans, La.
PRICE, JOS.	Philadelphia, Pa.
RHETT, R. B.	Charleston, S. C.
RISTEIN, C. E.	Knoxville, Tenn.
ROBINSON, W. L.	Danville, Va.

SIMONS, J. G.	CHARLESTON, S. C.
SIMONS, MANNING, . .	CHARLESTON, S. C.
SOUCHON, EDMOND . .	NEW ORLEANS, LA.
TIFFANY, L. M. . . .	BALTIMORE, MD.
WYETH, JOHN A. . . .	NEW YORK CITY.

Letters and messages of regret were received from a number who were prevented from attending the meeting.

FIRST DAY—*Tuesday, November* 13, 1894.

Morning Session.—The meeting was called to order by the President, Dr. Cornelius Kollock, of Cheraw, S. C., at 10 A.M.

Prayer was offered by the Rev. Dr. Campbell, of Charleston.

President Kollock then introduced the Mayor of Charleston, who delivered the following

ADDRESS OF WELCOME.

Mr. President and Gentlemen of the Association: I esteem it indeed a high privilege to have the opportunity of speaking a word of welcome to so distinguished a body, composed, as it is, of earnest students, of men eminent in professional life, of men engaged in the great science of healing. I welcome you one and all as benefactors of the human race. As the Chief Magistrate of the City of Charleston, in the name of her people, I extend to you and to every member of this Association a cordial welcome to our hearts and homes; and permit me to say that we esteem it a high honor which you have paid us in selecting our city as the place of your meeting. Working, as you are, for the great object which you have in view—that of alleviating human suffering—we owe you a debt of gratitude as our benefactors. Your aims are high. The civilized world gives you its encouragement, and we look on with great interest at the assembly of distinguished men in our midst. I trust that all your deliberations here will be fraught with the best of results, and remember, gentlemen, that you are our guests. Again, extending to you a cordial welcome, I wish you all the good that may flow from your deliberations.

President Kollock: You have heard the cordial welcome which the Chief Magistrate of the City of Charleston has ex-

tended to us. Although I am not a resident here, I know the old city well, and I know it is a city of refinement, culture, and great hospitality. It is Charleston's invariable rule to always treat its guests kindly and hospitably, and I know I express the sentiments of the members of this Association when I congratulate them on meeting in the old city by the sea.

Dr. Brodie then welcomed the Association on behalf of the local profession.

ADDRESS OF WELCOME BY DR. BRODIE.

Mr. President and Gentlemen of the Southern Surgical and Gynecological Association: The accident which finds me the President of the Medical Society of South Carolina at this particular time brings with it the honor and the privilege of appearing before you; and so, in behalf of this venerable body, I bring to you greetings and extend to you a cordial welcome to the old city by the sea. The very name of Southern, by which you are known, is the synonym of all that is warm in feeling, generous in impulse, culture in intellect, and is the exponent of those qualities we are seeking to find among you—a common brotherhood. True it is that the domain of science knows no South, no North, no East, no West, but surely we may be permitted to enjoy our individual rights while we extend to our neighbors courtesy and good fellowship.

The honorable and learned gentleman who has just preceded me has from innate modesty refrained from dwelling on the beauties and advantages of the city over which he presides with such dignity and credit. In following in his footsteps permit me to call your attention to our street-car arrangements. It is a comfort to remember that while you sojourn among us there is no danger of being roasted in a trolley conveyance nor mangled in a cable car, but, after your labors shall have been completed here from day to day, you will be transported in a quiet, easy way, suggestive of sleep, during the half hour or more in reaching your destination. Of our streets and drains there is little to be said. We can simply report progress. Gentlemen, something more than social environment brings you here. You have to discuss subjects of great moment and practical importance —subjects that will engage your thought during your brief

stay among us. Through your courteous discussion, ripe experience, and a generous rivalry, at this meeting there will come to each of you new light and strength in your future work for God and humanity. While we are outside of the pale of your organization, we are nevertheless in sympathetic touch with its aims and objects.

Again, in the name of the Medical Society of South Carolina, I bid you welcome to Charleston.

President Kollock: Having received a cordial welcome from the Mayor of Charleston, our pleasure is enhanced by being welcomed by the profession of South Carolina in the person of Dr. Brodie. I desire to thank him in behalf of the Association for the courteous manner in which he has extended this compliment to us.

Dr. Manning Simons, Chairman of the Committee of Arrangements, then submitted the following report:

REPORT OF THE CHAIRMAN OF THE COMMITTEE OF ARRANGEMENTS.

Gentlemen: As Chairman of the Committee of Arrangements I beg leave to make the following report of the preparations that have been made for the Seventh Annual Meeting of the Association. The sessions will be held in the German Artillery Hall, a building selected on account of its central position and its proximity to the Charleston Hotel, the headquarters of the Association. The Committee, recognizing the extent and the importance of the elaborate programme, have endeavored to so arrange and divide the time so as to interfere as little as possible with the work of the Association. The Committee feel, however, that some opportunity ought to be given to the profession and to citizens of Charleston to become personally acquainted with and enjoy the society of the distinguished Fellows of the Association. At the request of the Secretary of the Association, we have endeavored so to arrange as not to break into the midday hour of the session. There will be an informal lunch served in a lower room of this hall between the hours of 12 M. and 1.30 P.M. each day of the sessions.

On the afternoon of Tuesday, the 13th instant, the Association and ladies are invited by Captain F. W. Wagener and other

gentlemen associated with him to attend a reception at the Pine Forest Inn, at Summerville, S. C. A special train of cars will leave the depot of the South Carolina and Georgia Railroad at 2.55 P.M. Returning the company will leave the Inn at 9 o'clock to take the train at 9.30 o'clock for the city.

Dr. C. W. Shepard has extended a cordial invitation to the Association and ladies to visit his tea farm and gardens, at Pinehurst, near Summerville, where the opportunity will be afforded them of drinking a cup of tea, grown and made on the spot, and to see the beautiful flowers growing in the open air.

On the arrival of the train at Summerville the party will be taken in vehicles through the grounds of the pine forest to Pinehurst, where a half hour will be expended in the gardens. From Pinehurst the party will return to the Inn, where they will be cordially welcomed by Captain Wagener.

On Wednesday afternoon the medical profession of Charleston have prepared a steamboat excursion, to which the Fellows of the Association and ladies are cordially invited. The steamer Planter will leave Accommodation Wharf at 2 P.M. sharp. On this excursion our guests will have the opportunity of visiting points of historic interest in the harbor, as also points of interest along the Ashley and Cooper Rivers.

The Association is invited by his Honor, the Mayor of Charleston, to visit the Council Chamber at any hour between 9 A.M. and 2 P.M., or at any other time that the Association may elect, if notice be given. Paintings and relics of historic interest are to be seen here.

The Association is also invited by Dr. G. E. Manigault, the curator of the Museum of the College of Charleston, to visit the museum. He will take pleasure in showing the members through at any time that they may elect.

Mr. G. W. Williams, Chairman of the Commissioners of the Orphan House, cordially invites the Association in behalf of the Board to visit the Orphan House of Charleston. Dr. J. S. Buist, Chairman of the Committee on Education, and Mr. Williams will cheerfully meet the members at any designated hour, and show them through the building.

The members of the Association are cordially invited to accept the privileges and hospitalities of the Charleston Club. They

are also invited by the Maritime Sanitation Committee of the Board of Health to visit the Quarantine Station at Fort Johnson, where may be seen a steam-disinfecting cylinder.

A little badge will be provided for each member of the Association at the Secretary's desk.

MANNING SIMONS,
Chairman of Committee of Arrangements.

At the conclusion of the report Dr. Hunter McGuire moved that an evening session be held at 8 o'clock, Tuesday, in place of the afternoon session. Carried.

Papers were then read as follows:

1. "Memorial Address on Dr. Warren Stone," by Dr. A. B. Miles,[1] of New Orleans. The address was read by Dr. W. E. Parker, of New Orleans. He said:

Mr. President and Gentlemen: I consider it a great compliment to have been asked to read to you the address on Dr. Stone prepared by the lamented Miles. These men had a few traits in common. Both came to New Orleans when poor and without friends. Both in time became connected with our Charity Hospital and became connected with the University. Each started his career, as a teacher, as Demonstrator of Anatomy and ended it as Professor of Surgery. Miles had a perfect knowledge of anatomy, remarkable judgment, a cool head and a steady hand, and a manner that at once gave confidence to his patients and made friends of them. As it is not our custom to have biographical sketches of more than one of our great surgeons read at any of our meetings, I will not try to tell the story of his life. If told, the story would be that of a man who was a devoted brother, a true friend, a great surgeon, a successful teacher, and who was beloved and honored by the citizens of the community in which he lived. He had taken a special interest in the address on Dr. Stone, and fortunately had completed it. As one of his special friends I have been asked to read it, and will now do so.

2. "Gonorrhœa in Women," by Dr. J. B. S. Holmes, of Atlanta, Ga.

Dr. W. E. B. Davis moved that visiting physicians be extended the privilege of taking part in the discussions. Carried.

[1] Deceased.

Dr. Holmes's paper was then discussed by Drs. Engelmann, Brown, Douglas, Johnson, Nicolson, Cartledge, W. E. B. Davis, Haggard, John D. S. Davis, McGuire, and discussion closed by the essayist.

3. "Some Cases of Intestinal Obstruction, with Deductions Therefrom," by Dr. A. M. Cartledge, of Louisville.

Discussed by Drs. McRae, Nash, J. D. S. Davis, Hall, Douglas, Robinson, Kollock, W. E. B. Davis, and in closing by the author of the paper.

On motion, the Association adjourned until Wednesday morning at 9 o'clock.

SECOND DAY—*Wednesday, November* 14, 1894.

Morning Session.—The Association was called to order at 9 A.M. by the President.

4. "Hernia of the Diaphragm, with Report of a Case," by Dr. F. W. McRae, of Atlanta, Ga.

Discussed by Drs. Parker, Wyeth, W. E. B. Davis, and in closing by the author.

5. "Gunshot Wound of the Spleen; Hæmostasis by Deep Suture; Recovery," by Dr. L. McLane Tiffany, of Baltimore, Md.

Discussed by Drs. W. E. B. Davis, Price, Wyeth, Parker, and in closing by Dr. Tiffany.

6. "Successful Treatment of a Case of Nevus by Electricity, with Remarks," by Dr. William P. Nicolson, of Atlanta, Ga.

Discussed by Drs. McRae and John D. S. Davis.

7. "Operation for Complete Perineal Laceration," by Dr. Joseph Price, of Philadelphia.

Discussed by Drs. Douglas, Johnson, Robinson, McGuire, Hall, Engelmann, Douglas, Noble, Lewis, Cartledge, W. E. B. Davis, and in closing by Dr. Price.

Dr. Holmes then took the chair, and President Kollock delivered his annual address.

Dr. Engelmann moved that a vote of thanks be extended to the President for his address. Carried.

8. "Observations on the Action of Chloroform on the Functions of the Human Brain and Spinal Cord as Witnessed in Extensive Injuries of the Cranium and Brain," by Dr. Bedford Brown, of Alexandria, Va.

Discussed by Drs. Parker, McGuire, Nash, Baxter, Price, Wyeth, McRae, Price, Kollock, and Cunningham.

On motion, the Association adjourned until 8 P.M.

Evening Session.

The Association reassembled at 8 P.M., and was called to order by the President.

9. "Hydro-pyonephrosis; Successful Removal of a Forty Pound Tumor of the Kidney," by Dr. Joseph Taber Johnson, of Washington, D. C.

Discussed by Drs. Price and John D. S. Davis.

10. "Gynecological Surgery Away from the Large Cities and Educational Centres," by Dr. William L. Robinson, of Danville, Va.

Discussed by Drs. Price, John D. S. Davis, W. E. B. Davis, and in closing by the essayist.

11. "Movable Kidney," by Dr. George Ben Johnston, of Richmond, Va.

Discussed by Drs. Wyeth, John D. S. Davis, W. E. B. Davis, Douglas, Nash, Robinson, Price, and in closing by the essayist.

12. "Acute Peritonitis," by Dr. Richard Douglas, of Nashville, Tenn.

Discussed by Drs. Price, Cartledge, Earnest, Baxter, Cunningham, Wyeth, Robinson, W. E. B. Davis, Hall, Parker, and in closing by the essaying.

On motion, the Association adjourned until Thursday morning at 9 o'clock.

THIRD DAY—*Thursday, November* 19, 1894.

Morning Session.—The Association met at 10 A.M., and was called to order by the President.

The President announced as an Auditing Committee Drs. Holmes, Douglas, and Robinson.

13. "History of Vaginal Extirpation of the Uterus," by Dr. George J. Engelmann, of St. Louis, Mo.

Discussed by Drs. Hall and Douglas.

Dr. Engelmann then exhibited a speculum in connection with

his paper, after which further discussion took place, and was participated in by Drs. Lewis, Noble, Johnson, Hall, Earnest, and in closing by the essayist.

14. "Reminiscences of Dr. J. Marion Sims in Paris," by Dr. Edmond Souchon, of New Orleans, La.

Dr. W. E. B. Davis moved that a vote of thanks be tendered to Dr. Souchon for his able, interesting, and instructive address. Carried.

15. "A Case of Vaginal Hysterectomy for Carcinoma of the Uterus Three Days after Parturition," by Dr. George H. Noble, of Atlanta, Ga.

Discussed by Drs. Robinson, Johnson, Hall, and in closing by Dr. Noble.

16. "Ligation in Continuity, with Report of Case 1, Ligation of the External and Internal Carotid Arteries and Internal Jugular Vein; Case 2, Ligation of the External Carotid Artery," by Dr. John A. Wyeth, of New York.

Discussed by Drs. Nicolson, Nash, Baxter, John D. S. Davis, Johnson, Hall, Engelmann, and in closing by the essayist.

17. "Simultaneous Appearance of Cancer in the Breast and Uterus," by Dr. James Evans, of Florence, S. C.

Discussed by Dr. Nash.

18. "Report of Cases of Varicocele Treated by the Open Method and Shortening of the Scrotum," by Dr. William E. Parker, of New Orleans.

Discussed by Drs. Nash, John D. S. Davis, Nicolson, Tiffany, and discussion closed by the essayist.

19. "Fibroid Tumor of the Uterus, with Suppurating Ovary Discharging per Rectum," by Dr. Rufus B. Hall, of Cincinnati, Ohio.

Discussed by Drs. Lewis, W. E. B. Davis, Robinson, Douglas, and in closing by the essayist.

20. "Some Complicated Cases of Abdominal Surgery," by Dr. J. G. Earnest, of Atlanta, Ga.

Discussed by Dr. Hall.

21. "Removal of an Intra-uterine Fibroid Tumor by Morcellment without Hemorrhage," by Dr. Herbert M. Nash, of Norfolk, Va.

Dr. Bedford Brown read the report of the Council, as follows:

REPORT OF THE COUNCIL.

At a meeting of the Council, held November 15, 1894, the following applications for membership were favorably acted upon:

D. F. Talley	Birmingham, Ala.
Christian Fenger	Chicago, Ill.
N. P. Dandridge	Cincinnati, Ohio.
R. K. Smith	Pratt City, Ala.
John T. Henry	Chester, S. C.
W. H. Ford	St. Louis, Mo.
W. R. Luckie	Birmingham, Ala.
Thomas Charlton	Savannah, Ga.
Southgate Leigh	Norfolk, Va.
J. B. Murphy	Chicago, Ill.
F. E. Baldridge	Huntsville, Ala.
Seneca D. Powell	New York City.
J. S. Buist	Charleston, S. C.
R. B. Rhett, Jr.	Charleston, S. C.
C. E. Ristein	Knoxville, Tenn.

Dr. John A. Wyeth, of New York, was selected to prepare and deliver an address at the next meeting on the life and character of Dr. Marion Sims. The Council decided to recommend Washington as the next place for the assemblage of the Association.

The Council recommends the following names as officers for the ensuing year:

President—Dr. L. McLane Tiffany, of Baltimore, Md.

First Vice-President—Dr. Ernest S. Lewis, of New Orleans, La.

Second Vice-President—Dr. Manning Simons, of Charleston, S. C.

Treasurer—Dr. Richard Douglas, of Nashville, Tenn.

Member of Council for Five Years—Dr. L. S. McMurtry, of Louisville, Ky.

A resolution was passed to recommend to the Association the adoption of the resolution offered at the last meeting to elect honorary members to the number of ten, placing the limit at that number, beginning with the election of five at this session, viz.: S. Pozzi, of Paris; A. Martin, of Berlin; George Foy, of

Dublin; Charles Jacobs, of Brussels; and O. Morisani, of Naples.

Dr. John D. S. Davis: From the enthusiasm with which the report of the Council has been received, it is clear to us that it is unnecessary to take a vote. I therefore move that the report be received, the recommendations accepted, and that the Secretary be instructed to cast the ballot of the Association for the officers mentioned. Seconded and carried.

Secretary Davis then cast the ballot of the Association for the officers mentioned, and they were declared duly elected.

Dr. Holmes, on behalf of the Auditing Committee, reported that the Committee had examined both the books of the Secretary and Treasurer, had found the proper vouchers, and that both accounts were entirely correct.

On motion, the report of the Committee was adopted.

Dr. Douglas: Mr. President—I have a very pleasant duty to perform, and it is this: We all very greatly appreciate the courtesy and hospitality shown us, and it is only proper that we show our acknowledgment and approval of the same by offering this resolution:

We, the Fellows of the Southern Surgical and Gynecological Association, in session assembled, feel it is our high privilege to express by formal resolution in no unmeasured terms our high appreciation of the cordial, well-marked courtesy, and generous hospitality with which we have been received and entertained; therefore, be it

Resolved, That the thanks of the Association be extended to our distinguished Fellow, Dr. Manning Simons, Chairman of the Committee of Arrangements; to the profession of South Carolina; to his Honor, the Mayor, and ladies and gentlemen of the city of Charleston.

In our parting we shall carry to our homes a grateful memory of this interesting and historic city, whose people are as loving and noble in peace as they were fearless in war.

On motion of Dr. Noble, the resolution was unanimously adopted.

Drs. John D. S. Davis and W. L. Robinson were appointed to escort the President-elect to the chair.

Dr. Tiffany, in coming forward, was received with applause,

and in accepting the Presidency of the Association spoke as follows:

Gentlemen: I trust you will believe me when I say I thank you most cordially and from my heart for the distinguished honor you have done me in electing so unworthy a member to this office, which has been filled with such dignity by this and our former Presidents. It shall be my endeavor, as far as possible, to imitate, while I cannot expect to equal, the present incumbent, as well as those who have gone before him.

I did not hear the report of the Committee, but I understand the next meeting of the Association is to be held in Washington. While it is not in the town where I live, yet it is near enough for me to bid you a most cordial welcome there. I can assure you that Maryland will extend you a welcome, with all that it means.

President Kollock, in retiring from the Presidency of the Association, expressed himself as follows:

It is with no small degree of pleasure that I turn this office over to you. I look upon the Southern Surgical and Gynecological Association as a great organization. It is becoming bigger and bigger every year, and it is going to do more good work every year. I am glad to have been one of the officers of this Association. I feel that it is one of the highest honors ever conferred on me. I have enjoyed it so much that it is with some reluctance that I give it up. I am consoled, however, in the fact that my mantle will fall upon such noble and worthy shoulders as those of my successor. I return my heartfelt thanks to the Association for the distinguished honor conferred upon me, and only regret that I could not fill the position more efficiently.

The following papers were read by title:

"The Diagnosis and Treatment of Congenital Cystic Hygroma," by Dr. J. A. Goggans, of Alexander City, Ala.

"Early Operation in Appendicitis, with a Case," by Dr. J. McFadden Gaston, of Atlanta, Ga.

"Plastic Operations for Carcinoma of the Breast," by Dr. John T. Wilson, of Sherman, Texas.

"Transfusion in the Treatment of Acute Hemorrhage," by Dr. T. J. Crofford, of Memphis, Tenn.

"Puzzling Points in Labor," by Dr. George R. Dean, of Spartansburg, S. C.

"The Value of Plastic Work in Intra-peritoneal Operations," by Dr. J. W. Long, of Richmond, Va.

"The Surgical Treatment of Spina Bifida, with an Illustrative Case," by Dr. H. O. Marcy, of Boston, Mass.

"Ligation of the Uterine Arteries in the Treatment of Chronic Metritis," by Dr. W. E. B. Davis, of Birmingham, Ala.

"A Report of Four Illustrative Abdominal Sections," by Dr. L. S. McMurtry, of Louisville, Ky.

There being no further business before the Association, it adjourned to meet in Washington on the second Tuesday in November, 1895.

W. E. B. Davis, M.D.,
Secretary.

ANNUAL ADDRESS OF THE PRESIDENT.

By Cornelius Kollock, M.D.,
Cheraw, S. C.

Fellows of the Southern Surgical and Gynecological Association: It is good for us to be here. There are times when it is meet for us to step aside from the path of daily duty and indulge the spirit in that which is cheering and refreshing—refreshing, as we are off from the every-day routine of work, and cheering because we meet many friends and add to our list of acquaintances new names and faces.

And it is right and proper that I should, at this time, express my sincere thanks for the kind and courteous manner in which you have seen fit to select me to preside over this able band of scholars, scientists, and philosophers. Gentlemen, the honor you have conferred on me is surely the greatest I have ever worn. I do honestly regret that I cannot feel myself worthy of it, for I know that there are others in this Association more fit for the position and more deserving of it than I; and I must be permitted to say that, in your disposition to honor me you have allowed your kindness to get away with your better judgment. When I recall the names of the able and distinguished men who have preceded me in this honorable position—men who have occupied high places in the profession—and bring to mind their words of wisdom and their practical teachings, may I not be somewhat anxious lest I fall below the standard that has been set, and prove myself unequal to the occasion. And is it strange if I fear

that the honor conferred on me, instead of being worn as a crown of joy, may become a heavy burden?

We are met to-day to celebrate the seventh anniversary of the Southern Surgical and Gynecological Association. Some have come from the snow-clad hills of New England, and others from scenes of almost tropical verdure fanned by breezes from the Gulf; while the populous and cultured cities of the East and the thriving and progressive cities of the West have sent their representatives. And we are glad that so many of those who assembled last year in the fair Crescent City are with us to-day in the hospitable, historic, and heroic City by the Sea.

It is not my part, as your presiding officer, to recount the progress made in surgery and gynecology since our last meeting, nor to tell of the illustrious men of different branches of our profession, in this or other lands, who have passed away during that period. But it is my painful duty, and my pleasant privilege as well, to speak of two of the founders of this Association whom the Angel of Death has summoned since we last met.

In June Dr. W. T. Briggs heard the call. His life had been one of usefulness. As Professor of Surgery in the University of Nashville and in Vanderbilt University, and as surgeon to various hospitals, he had done excellent and remarkably brilliant work, and had achieved an enviable reputation; he had also been honored with the Presidency of the American Surgical Association and of the American Medical Association. He passed away in life's late afternoon.

In August Dr. A. B. Miles was taken from our number. He had been made Professor of Surgery in Tulane University, and was a man full of youthful activity and manly vigor, who, by patient study and diligent research, aided by a brilliant intellect, had won for himself a high position in the profession and in the estimation of his fellow men. To know him was to admire and love him. "His life was gentle; and the elements so mix'd in him that Nature might stand up and say to all the world, 'This was a man.'"

It is not surprising that this Association should, from its organization and management, prove a success. It has been presided over in the past by men of influence and ability fitted to shine in any medical circle and to adorn and give dignity to any reunion.

Yet not to its presiding officers alone has its success been due. Its founders are earnest men, but there is one among them especially earnest, having its welfare much at heart, a hard and willing worker, an excellent operator, well-known by reputation to the medical men of the South and of the North, striving for the advancement of the South, Southern in sympathy, yet catholic in spirit. This man is Dr. W. E. B. Davis, of Birmingham, Alabama, the Secretary of the Association.

It is now understood—is a fixed fact—that our Association was organized for the benefit of the medical profession in the South. Many of our medical men, owing to distance, lack of railroad facilities, or want of means, are unable to be present at the large meetings held in more northern sections of the country. They may read many of the valuable papers presented, but that is not like being on the spot, listening to and taking part in the discussions. There is nothing equal to a collision of mind with mind for bringing out and developing what there is in a man. A countryman who was fond of pugilistic encounters once wisely remarked: "If you want to be of any account, don't fight these little picayune chaps, fight one who can whip you; he will wake you up and make a man of you."

It is also well understood that while the Southern Surgical and Gynecological Association was organized for the benefit of the members of the medical profession in our Southern land, there is in it no sectional feeling, and no political bias degrades our noble society. We have now upon our roll the names of some of the ablest Northern men, and we will gladly welcome as many more as may be worthy and willing to join us. With the co-operation of these men, our Southern surgeons and gynecologists should be able to make rapid pro-

gress. We do not lack material here. The South has produced some of the ablest gynecologists and surgeons. Sims, Emmet, and Thomas, of an older generation, have been followed by half a dozen Southern men who have made their mark at the North. And there are those in our midst and throughout the South who have done wonderfully good work.

Sims has been called, and not without reason, "the Father of Gynecology." But should not Ephraim McDowell share that title with him? The latter is better known, however, as the father of ovariotomy. The man who, with a mob surrounding his house and with comparatively rude instruments, without the appliances of modern surgery, performed the first ovariotomy and saved the life of his patient, is worthy of undying gratitude and immortal fame. And while we cordially give him his meed of praise, let us not forget the willing patient whose trust and bravery granted him the opportunity of proving the practicability of his wonderful operation. Brave physician, brave woman, we honor them both.

Dr. Gross, in his address at the dedication of the McDowell monument, in 1879, thus speaks of McDowell's operation: "An operation which, in its aggregate result in the hands of different surgeons, has already added forty thousand years to woman's life, and which is destined, as time rolls on, to rescue thousands upon thousands of human beings from premature destruction." Surely Ephraim McDowell was one of the greatest benefactors of the human race.

While in all branches of gynecology good progress has been made, we note with pleasure that surgery has had its triumphs. Many reports of cases show enlarged experience and continual improvement in the treatment of appendicitis, hernia, intestinal obstruction, and many other ills that flesh is heir to.

Our Association has the advantage of combining two specialties, surgery and gynecology. For the country doctor, away from large communities, a knowledge of both is almost imperative. In cities, gynecologists and surgeons may supplement each other's work, but in the country, doctors cannot

always go in pairs. Let our young physicians, especially those who seek a country practice, strive for a knowledge of both specialties; then there will be less of the murderous practice of craniotomy and a more sacred regard for the preservation of life.

I think I may say, before ending this brief address, that our Association desires to express its sympathy with all earnest students and workers, the world over, whose aim is to discover truth, to promote the cause of science to benefit humanity, and to show their love of God by their love of man.

Fellows and friends of the Southern Surgical and Gynecological Association: I wish you all happiness in the future, but chiefly that which springs from duty done. Should your span of life extend to the sixties, the seventies, or even beyond the eighties, may you be able to speak of yourselves, like the genial professor, essayist, philosopher, and poet who has lately joined the great majority, as not so many years old, but "so many years young."

MEMORIAL ADDRESS ON DR. WARREN STONE.

By Albert B. Miles, M.D.,
New Orleans.

In observance of a dutiful and befitting custom, we have come, Mr. President, with an humble tribute to a Southern surgeon, whose memory the people of Louisiana especially love to honor. For more than the third of a century his name was familiar in the South and known favorably in the other States, and yet almost a stranger in our literature. He labored industriously in a fruitful field, and yet his published writings tell but poorly the story of his busy life and work. His fame lives in our traditions. As Professor of Surgery in the University of Louisiana for thirty-five years, as Surgeon to the Charity Hospital for thirty-nine years, and as general practitioner from 1832 to 1872, whose experience covered eighteen epidemics of yellow fever and cholera in New Orleans, the name of Warren Stone is impressed indelibly upon the local history of a remarkable period.

This address might have come more suitably from the pen of some friend who knew him in life, and better able to portray those traits that distinguished this remarkable man. However, no personal friend could have discharged his duty with sentiments of higher respect, and surely no member of this body could have been chosen more deeply sensible of the distinction your choice has conferred. In the effort to make our statements authentic we have incurred obligations, which we desire in advance to acknowledge; to Dr. Charles J. Bickham, of the Board of Administrators of Tulane University, and Professor Stanford E. Chaillé, Dean of the Medical De-

partment, both pupils and friends of Dr. Stone, for their reminiscences of his personal and professional character; and to Professor Joseph Jones, who kindly placed at our disposal the biographical sketch prepared by him for publication in the volume entitled *Eminent American Physicians and Surgeons.* The eulogy delivered by Professor James Jones in 1873 has been consulted for such information as only a contemporary and intimate friend could furnish.

At St. Albans, Vermont, Warren Stone was born on the 3d of February, 1808. He was the youngest of the three children of Peter Stone, a farmer, and Jerusha Snow. The father died before this son was born, but the mother outlived him, and died past ninety years of age. His youth was spent on a New England farm, where the opportunities for attending school were necessarily restricted. The teachings of his mother supplemented these deficiencies, and aided materially in preparing him for the study of medicine, for which in early youth he had shown a strong predilection. The reasons are apparent for the very tender attachment for his mother, so often observed by those who knew him intimately.

In due time he went to Keene, New Hampshire, and became the private pupil of Dr. Amos Twitchell. This accomplished surgeon soon won his affection and imbued him with a special fondness for surgery. In proper time the pupil entered the Medical School at Pittsfield, Massachusetts, and, in December, 1831, received his degree in medicine. In retrospect of those preparatory years he often alluded to his preceptor's teachings, and with such grateful expressions as lead us to look beyond his collegiate courses for much that inspired his splendid career.

In 1832 Dr. Stone was located in West Troy, New York, practising medicine, when the cholera first appeared on this continent among the immigrants in Quebec and Montreal. These immigrants in their alarm started for the States by way of Lake Champlain and the Champlain Canal, and early in July several cases of cholera occurred in West Troy. To the

first of these cases Dr. Stone was called late at night, and promptly recognized the new disease. Several days later the following case occurred, which was narrated by himself thirty-five years afterward in support of an argument against the contagious nature of cholera: "A humane person requested me to see a young man, lying on a pile of lumber, who, he said, appeared very ill. I found him in the collapsed state of cholera. As he was destitute, I obtained an outhouse of the landlord and had him conveyed to it, and stayed with him the greater part of the time for twenty-four hours, administering his medicines, and even injecting a saline mixture into a vein in his arm. The room was close, but I suffered no inconvenience from contact and confinement." This case was related for a controversial purpose, but how well it illustrates that philanthropy which was ever a dominant principle in his professional life.

Looking to the South for his future home, in the latter part of October of the same year he left West Troy, and embarked in the brig "Amelia" for New Orleans. There were few cases of cholera in New York when the ship sailed. The ship was overcrowded with passengers, and otherwise carried a valuable cargo. The log of this voyage is here given in Dr. Stone's own words: "For the first four days there was a calm, and everything was healthy; but a terrible storm came, and it was found necessary to fasten down the hatches and stifle over a hundred beings in the small space between a small ship's decks. I expected serious consequences. The captain, who was willing to do whatever was proper, said that the hatches could not be raised without imminent danger of sinking the ship, a fact which was subsequently verified. On the third day of the storm there was a cry that there was a man dead below. The weather having moderated a little, I found a deplorable state of things. All seemed stupefied from foul air, and about twenty-five seemed to be in the second stage of cholera. At this period in the voyage, on the 30th of October, the brig, in distress, was beached on Folly Island, off Charleston harbor, and there subsequently, by order of the

municipal authorities, the vessel and cargo were burned. The terrifying disease of which these unlucky voyagers were suffering spread great alarm, but pity for their misfortunes soon became the prevailing feeling."

Mr. Alexander Milne, the owner of the island, opened his house and all the buildings for the reception of the passengers and crew, and furnished them immediately with necessary supplies. Charleston responded at once, and sent physicians, provisions, and all necessaries for the sick. Dr. Stone remained with his ill-fated passengers, administering to them and rendering every assistance in his power. At this juncture, while in attendance on the sick of the island, he met Dr. Thomas Hunt, then of Charleston, who had been commissioned by the municipal authorities to take entire control of the sanitary affairs of the plague-stricken island. Here, amidst scenes of pestilence, Dr. Hunt and Dr. Stone became friends, and ever afterward, through more than a third of a century, this friendship remained unbroken. This meeting was one of the most fortunate incidents in the life of Dr. Stone. The unhappy experiences of his voyage from New York to New Orleans were not to end until he had himself been stricken by the disease. His friend then became his physician.

The survivors of the "Amelia," through the liberality of the city of Charleston, were sent in chartered vessels to their destinations—the steerage passengers to Mobile, the captain and cabin passengers to New Orleans. The generosity of the citizens and Council of this city in offering hospitality to the crew and passengers of the "Amelia," shipwrecked and suffering of a spreading plague, and then their exceeding liberality in helping the survivors on their way, are incidents worthy of honorable record in the history of any people. It seems a remarkable coincidence that we should come to Charleston to read this memorial address and recount these historic incidents among the important events in the early life of Dr. Stone.

In December, 1832, he landed on the levee in New Orleans a friendless stranger, with only one picayune in his pocket. He once said to a friend, half-humorously, that he would not

have saved this but for the sake of preserving a nucleus. Evidently in the scenes through which he had passed his purse had proven unequal to his generous heart.

Here for a moment we pause to survey the situation presented to the stranger when he had at length reached his destination. This was a memorable year in the annals of New Orleans. Yellow-fever was declared epidemic on the 15th of of October, and ten days later the cholera appeared. The desolation of one disease was eclipsed by the new horrors of the other. Dr. Lawson, then senior surgeon of the Army at New Orleans, afterward Surgeon-General, says in his official report that in the city the victims of cholera numbered about six thousand, the population being perhaps fifty-five thousand souls. The new Charity Hospital had just been built, and its wards were crowded with the sick. The best medical talent of New Orleans was being devoted gratuitously to its service.

To this institution Dr. Stone was naturally attracted and offered his services. Through the kindness of Dr. A. H. Cenas, at that time and for many years afterward a visiting physician, he was appointed a supernumerary in the medical department. At that time Dr. J. M. W. Picton was the house surgeon, doing an extensive work in general surgery. He was succeeded in August, 1833, by Dr. Thomas Hunt, who had moved to New Orleans, with the prestige of his splendid reputation in Charleston, and had at once taken rank in the profession. The friendship of Folly Island was renewed, and Dr. Hunt, in a letter to the Board of Administrators of the hospital, very warmly commended Dr. Stone for promotion. A few words from this letter are worthy of reproduction as establishing beyond question Dr. Stone's competency in medicine at that time, and his preparation for responsible service: "It gives me pleasure to state, from my personal knowledge, that Dr. Stone is a humane and worthy man, and a well-informed, skilful, and, for his age, an experienced surgeon. He is in every respect qualified for the office of assistant house surgeon." These men, born in the same year, were of nearly the same age. The faithfulness of their

friendship is admirable. The promotion recommended did not follow immediately, but came in due time.

After residing at the hospital but a short time Dr. Hunt resigned. He had conceived the idea of founding a medical college in New Orleans, and desired to devote his energies to that purpose. Dr. John H. Harrison, a scholarly man, and much beloved, was elected in his place. Dr. Stone was elected assistant house surgeon. He was the first appointee to this office, and in this capacity served from 1833 to 1835. This is the first official position held by him in New Orleans. Upon the retirement of Dr. Harrison in his favor, Dr. Stone was elected house surgeon, and served from 1835 to 1839. At the expiration of his term he was elected a visiting surgeon to the hospital, in which capacity he served until his retirement from all active work in 1872. It gives us pleasure to allude, in passing, to the firm friendship between Dr. Harrison and himself—one a man of diminutive physique, the other a giant by his side. In other respects they differed, but their general traits of character were the ties. Dr. Stone, in good humor, used to call Dr. Harrison his walking stick.

We now speak of a prominent feature in his professional life—his connection with the Charity Hospital of Louisiana. Here wide scope was offered for his tireless industry and his broad benevolence. Here most of his best work in surgery was done. No surgeon on its roster, where many honorable names have been enrolled, has contributed as much to the reputation of this institution. His long term of service, the extent of his practical work, and his charities among the poor have linked his name indissolubly with the history of the hospital.

We have gleaned much in regard to his services at the hospital from Dr. Charles J. Bickham, his ward student in 1855 and 1856, and subsequently the assistant house surgeon. From his personal reminiscences, kindly written for us, we have extracted the following: "He was methodical and industrious, quick in perception, and prompt in the execution of what he conceived to be his duty in all cases. His

thoughts were rapid, and he seemed always to take in at a glance the whole circumstances and details of a case. This kind of knowledge and ready comprehension as to the true state of things in any case was a peculiar and marked characteristic of the man. It is often called intuition. Call it what you will, Dr. Stone possessed this faculty to a marked degree, and appeared always to be ready for any emergency that might arise.

"His resources were unbounded. He never seemed to be taken unawares. His knowledge, tact, and ingenuity were equal to the occasion, and he never appeared so cool, self-possessed, and grand in his whole nature, physical, mental, and moral, as he did in the midst of sudden and alarming emergencies in surgery. He seemed to rather welcome such occasions, and in the midst of the most complicated and difficult operations, cool, calm, and collected, he would promptly do his duty, at the same time lecturing and explaining to those present the minutest practical details of the case. In truth, every visit to the hospital was an ovation to him, which he acknowledged with becoming modesty, but which served to doubly inspire him; and his entire time at the hospital was one constant discourse upon the various diseases and their treatment to those around him. He seemed to realize his capability and that much was expected of him; yet, withal, he was as modest as a woman and appeared oblivious of his good deeds."

In his surgical clinics he taught the advanced surgery of the old school. He taught the principles of drainage in suppurative arthritis, in hepatic abscesses, and in pyothorax. He advocated resection of the rib to facilitate the drainage in suppurative pleuritis. Whether in operative work or in the liberation of pus he made free incisions. In the surgery of the arteries he was an expert. He was among the first in the cure of aneurism of the vertebral artery. In November, 1849, he operated successfully in a case of traumatic aneurism of the vertebral by incising the sac, turning out the coagulum and controlling the artery by a graduated compress.

During fourteen years of his work at the Charity Hospital he operated without an anæsthetic. Realizing the difficulties under which he labored, he was ready to welcome the new era in surgery then about to dawn. The news of the discovery of ether anæsthesia was not received with universal favor. *The New Orleans Journal* joined *The Medical Examiner*, of Philadelphia, in decrying the use of "such an invention as this." Its patented features and its toxic power were strongly urged in objection. Such was the feeling in regard to the use of ether when Dr. Stone, on the 25th of February, 1847, amputated the thigh of a man whilst in a state of etherization. The operation was performed in the amphitheatre of the Charity Hospital. The reporter of the occasion, in the published record, adds, with apparent exultation, "The operation was entirely satisfactory to all who witnessed it—a thigh had been amputated without pain." This incident illustrates Dr, Stone's independence of action in all medical matters about which his convictions had matured.

When chloroform was introduced it became and continued his preferred anæsthetic. His influence in professorial teaching and in hospital practice before large classes of medical students has been an important factor in determining the choice of this agent by so many of the profession in the South.

In the surgical service of the Charity Hospital his early contemporaries were Luzenberg, Picton, Mercier and Wedderburn; the junior colleagues of his latter days were Smyth, Schuppert, Choppin, Richardson, and Samuel Logan.

It is worthy of mention that for thirteen years of the period of his connection with the hospital, Dr. John C. P. Wedderstrandt was the house surgeon, appointed under the auspices of Governor Roman. Dr. Wedderstrandt was a gentle and gifted man, always a student, and highly accomplished as a medical diagnostician. He and Dr. Stone were closely attached friends. They often met in consultation in the wards of the hospital, and their joint opinion, however involved the case, was accepted by their confrères as conclusive and correct.

In 1839, at the expiration of his term as House Surgeon of the Charity Hospital, Dr. Stone, in connection with Dr. William E. Kennedy, founded the Maison de Santé, which stood among the earliest private hospitals established in America. After the retirement of Dr. Kennedy, in 1845, Dr. Stone assumed entire control of the institution. Its domestic management was intrusted to the Sisters of Charity, and under their care its affairs went on prosperously.

In 1859 the Hôtel-Dieu, the infirmary of the Sisters of Charity, was founded, and the Sisters of the Maison went to the new mission. The old institution now became Stone's Infirmary, and here, with assistants and associates, he continued his extensive work in general surgery. His infirmary was conducted as a private institution, but medical relief was never withheld from any applicant at its doors. In the summer of 1847, when the soldiers of the United States Army in Mexico were returning, discharged and sick, and filling the hospitals in New Orleans, many of them were kindly cared for in the old Maison.

In 1861 Professor T. G. Richardson, then attending surgeon, in presenting the annual report of Stone's Infirmary, published in the March number of the *New Orleans Medical and Surgical Journal*, pays this beautiful tribute to his senior and friend: "It is an established rule of the house never to refuse professional services on the score of poverty of the applicant. And in this connection the writer takes the liberty of saying that the charity thus dispensed by his benevolent colleague, Dr. Stone, incalculable in amount and unostentatious in its bestowal, is of itself sufficient to elevate its author to that high rank among philanthropists which his well-known abilities have long since commanded in the profession which he adorns."

This infirmary, widely known in its day, was situated on the corner of Canal and Claiborne Streets, adjoining the Stone residence. Its doors were closed in August, 1867, and since then the buildings have been torn down and every vestige of them taken away.

Before concluding the account of his connection with hospitals, it must be mentioned that for many years he was consulting surgeon to the Hotel Dieu, in association with Dr. P. C. Boyer, the physician in charge. When the Hotel Dieu was founded, Dr. Boyer became the physician by recommendation of Dr. Stone, and served for twenty-three years, until disabled by his fatal illness. The friendship of these men is worthy of record in this biography. Dr. Boyer was a physician of high character and a man without stain or reproach.

The most important part of Dr. Stone's professional life and work was his connection with the Medical Department of the University of Louisiana, which was the descendant in direct line of the Medical College of Louisiana and the parent and immediate predecessor of the present institution. From the first session, in 1834, until his retirement in 1872 he was an active and able teacher.

In the first session he was appointed, through the friendship of Professor Hunt, as the acting demonstrator of anatomy in the place of Dr. John H. Harrison, who was disabled by illness. From January, 1835, to July, 1836, he was the demonstrator of anatomy; from July, 1836, to January, 1837, lecturer on anatomy; from January, 1837, to May, 1837, professor of anatomy and lecturer on surgery; from May, 1837, to April, 1839, professor of anatomy and surgery; from April, 1839, to April, 1872, professor of surgery.

His only predecessor in the chair of surgery was Professor Charles A. Luzenberg, who taught during the first two sessions, and resigned during the third course. In those days Dr. Luzenberg held high rank in New Orleans as a surgeon, and was much admired for his professional accomplishments.

As a teacher of surgery Dr. Stone was never systematic, but usually discursive. In a didactic discourse he would not follow beaten paths. Some topic of the day, uppermost in mind or suggested by some recent case, would often beguile him from the announced subject of a lecture. His lectures, however, were always instructive and authoritative, and replete with axioms in happy illustration of essential principles.

His manner as a teacher was earnest and direct, and his convictions were impressed with emphasis. No one came within the radius of his influence, whether graduate or student, without being impressed by the weight of his opinions on the medical questions of the day. His views on medical subjects were well matured, expressed frankly, and sustained cogently by the cited opinions of the best authorities and by the results of his own close observation.

During visits to the Northern and Eastern cities he occasionally lectured by invitation before medical classes. Yellow fever was usually the chosen topic, as it was the absorbing theme in those days throughout the Southern section. A student of the University of Maryland in 1868, now Surgeon in the United States Army, Dr. J. L. Powell, recently in conversation recalled vividly the substance of a lecture once delivered before his class by Dr. Stone. The lecturer told his convictions and narrated his cases in such an earnest manner as left an ineffaceable impression on the minds of his hearers. One case of yellow-fever was related in which death seemed imminent from excessive temperature, when the Doctor packed his patient in an ice-box rather than see him perish of the heat of fever. The temperature was cooled and the patient recovered.

The lives of many men are mirrored in their books and published papers, but the writings of Dr. Stone give but meagre knowledge of his work or his position as an authority on surgery in the South. His pupils and assistants occasionally published surgical memoranda of his lectures and clinics on a variety of topics. His son, Dr. Warren Stone, Jr., himself an accomplished surgeon, published the last of these memoranda shortly before the father's death. These papers and all the more important articles written by himself were published in the *Medical Journal* of New Orleans.

For thirteen years no article in his own name appeared in the journals. In 1845 he wrote an article on "The Treatment of Wounded Arteries," the purpose of which was to give his views on the manner in which ligated vessels are

closed by a clot. To his opinion, expressed then, nothing essential can be added to-day.

In 1852 his most important article was entitled "Ligation of the Common Iliac Artery; Use of the Silver Ligature." This case was reported to show the advantage of the silver ligature, "which was preferred because of its innocuous character." In this paper he alluded to his observation of the experiments of Dr. Twitchell, his preceptor, which were made to prove that ligated vessels were closed by a clot and not by adhesive inflammation, and concluded with this statement: "All that is required of the ligature in the case of aneurism is to arrest the current of blood in the artery, and this can be done without strangulating the tissues inclosed in the ligature, so as to cause a division."

In 1858 his article entitled "Observations on Hernia and Obstruction in the Bowel" appeared in the *New Orleans Medical and Surgical Journal.* The author strongly advocated early operation. The following quotation epitomizes his views: "The bowel is in danger from the moment it is strangulated, and should be relieved as soon as possible."

The treatment of hernia was to him always an interesting subject. At a meeting of the Physico-Medical Society of New Orleans, the proceedings of which were published in 1858, he discussed the relative merits of Gerdy and Weitzer's method in the radical cure of inguinal hernia. At that time he employed an instrument devised by himself, and manufactured by George Tiemann, of New York, intended to combine and modify the methods just mentioned. His instrument consisted mainly of a canula and a silver needle or stylet. The canula was made after the pattern of Weitzer's cylinder, but used only for conveying the stylet, which alone was allowed to remain in the canal. The special advantages claimed for this plan was that the resulting inflammation would build up a barrier of lymph throughout the entire length of the inguinal canal.

In 1859 and 1860 he wrote a series of articles on "Inflammation," which were published in the same journal. In these

articles the author insisted on the importance of conditions modifying the inflammatory process, and urged the necessity of modifying the treatment of disease according to varying pathological states. He drew the distinction very sharply between the inflammation of esthenic and asthenic subjects from a clinical point of view. He showed a clear conception of the difference in the process by which a clean wound heals primarily and the true inflammatory process. Much attention was given to the subject of inflammation in his lectures and ward teaching. "Under certain conditions" he believed in venesection in the treatment of inflammation. In entertaining this view he was not alone at that time. He was, however, a judicious bleeder.

An article on "Union by the First Intention and Purulent Absorption" appeared in 1860. In this paper he contrasted the American and French methods of treating wounds, concurring fully in neither of the national modes. Observe in the following quotation the judicial action of the author's mind:

"The tendency of us all is to fall into a routine and to adopt some mode of treatment, and apply it to all cases and conditions, and hence the opposite systems of practice often seen, not only in different countries, but in the same country and in the same city, and even in the same hospital. This is strikingly illustrated by the exclusive and opposite methods of dressing wounds adopted by the American and French surgeons. The American surgeons dress with the view of obtaining union by first intention in all cases, whether it is probable it may be effected or not. The French surgeons fill their wounds with lint to prevent union, if there should be a disposition to it. The French, however, I believe are not so exclusive in their mode of dressing as the Americans, but both are undoubtedly wrong. It is undoubtedly true that our mode of dressing is far better adapted to our country than to France, but it is evident that neither method is adapted exclusively to either country."

In those days surgeons were playing hide and seek with

the principles of antisepsis, and in many of their therapeutic methods they were wiser than they knew. Dr. Stone used antiseptic astringents not for their bactericidal properties, but for their astringent action. This he deemed a mild and effectual alternative for the écraseur, then so much in vogue in France, preferring to contract rather than crush the tissues as a means of preventing purulent absorption. His theory was not so good as his practice. In septic states he urged strongly general tonics, a generous dietary and the malt liquors, having so often observed the effect of this regimen upon the local conditions of wounds.

His articles were not confined exclusively to surgical topics. In 1859 he wrote a paper on "Pulmonary Tuberculosis." His views on climatic treatment are worthy of reproduction here: "It is a long time since I recommended a patient to any of the tropical islands. The steady heat of the climate is injurious, and there is but little advantage in the monotonous equanimity of temperature. I verily believe that changes of temperature are of an advantage, provided patients guard against the immediate effect. My situation here in New Orleans, at the outlet of the great West, has given me an opportunity of witnessing the sad effect of sending patients in the second and third stages of phthisis from the comforts of home to those hot and debilitating climes. A dry, bracing atmosphere is best, and it is none the worse for being pretty cold, if the patient can exercise with comfort in the open air."

In 1866 he wrote on "Cholera and its Treatment," a subject which always interested him intensely. In this article he says: "It so happened that my professional life and the cholera in this country commenced together, or in the same year; and many incidents came under my observation calculated to throw some light on its character and pathology." The only authentic account of his beginning in medicine appears in the same article, and here, too, we found his own description of his perilous voyage in the "Amelia."

We have now mentioned his more important articles, and extracted parts of them, in which one may see his style as a

writer. The rarity of his writings is most remarkable in a man so full of practical information and so capable of instruction. His monographs were usually written at the solicitation of medical friends. The following letter is so characteristic, and shows so clearly his disinclination to write, that we reproduce it from an old issue of the *New Orleans Medical and Surgical Journal:*

August 29, 1859.

Mr. Editor: According to promise, I herewith send you a small contribution, which I fear you will think hardly worth publishing. I have undertaken to give some of my impressions upon an important subject (Inflammation), and my method of analyzing it, but find that I have totally failed. I know I have observed much and honestly, but with no object except to learn the right use of medicine; but although my convictions, to me, have all the force of facts, when I come to put them to paper I feel myself in the condition of an ancient philosopher, who, to a difficult question, answered, "If you don't ask me I know, but if you ask me I cannot tell." However, good or bad, publish it, and I will continue the subject and try to make something intelligent on the subject of treatment or the application of therapeutic agents to pathological conditions.

Very truly, your friend,

Warren Stone.

To Dr. B. Dowler.

He was himself editor of the New Orleans *Medical and Surgical Journal* from 1857 to 1859, and co-editor from 1859 to 1868. He had little or no aptitude for such literary work.

Our information, gleaned from a variety of sources, is to the effect that Dr. Stone, although disinclined to write himself, was well informed in the medical literature of his day. In foreign travel he was received by some of the distinguished men of that time with marked attention. From his letters written while abroad, we infer that he proved himself quite capable of discussing the operative methods then on trial for the radical treatment of inguinal hernia with the surgeons of Guy's and Westminster; foot amputations and resections with

Mr. Syme, of Edinburgh ; the relative merits of extirpation and iodine injection in the treatment of ovarian cysts with Baker Brown, Simpson, and Trousseau, himself taking the ground that excision was the proper method of treatment. He was distinguished as a diagnostician before the days of instrumental precision. In deciding the time for an operation, which was an important matter in the preanæsthetic days, his judgment was reliable. For his decisive action in emergencies he was much admired. He was, as we may judge from the accounts of all who remember his methods, especially conspicuous for his practical sense in all matters relating to operative and after treatment.

In our researches among the writings of his Louisiana contemporaries we have been profoundly impressed by their respect for his position and opinions. And here, in passing, we desire to pay the highest tribute to those contemporaries. The medical journals of New Orleans published in those days teem with their writings, which characterize them as men of high culture and zealous in their calling. No man in the profession of Louisiana was ever so universally beloved as Dr. Stone. In his relations with other physicians he was gentle and considerate, never intrusive or aggressive. Many of the physicians in Louisiana to-day who knew him in life speak of him affectionately as Old Stone, and always with some expression of endearment and respect. His position in New Orleans may be compared with that of Physick in Philadelphia, Mott in New York, Liston in London, Velpeau Paris.

Among the people he was the "Great Commoner in Medicine," as happily named by Professor Samuel D. Gross in a brief address once delivered before a New Orleans audience. His name was familiar in most of the homes of Louisiana, and dear alike to our gentlest folk and the lowliest. He was on good terms with all classes of the people, sturdy and steadfast among them during epidemics, and a friend on whom they could depend whatever might befall. Contact with the people never lessened the grandeur of his character in their

esteem, but only gave them opportunity for learning those qualities of the man which irresistibly drew them to him. He was so thoroughly a man of the people that when he died their expressions of sorrow were manifested in many ways. The District Courts were adjourned as a mark of respect, the flags of the shipping stood at half-mast, and many of the stores on the main streets were closed at the time of the funeral.

A man of his position and prominence was naturally sought for responsible offices in municipal and State government. He was Surgeon-General of the State of Louisiana for a time during the Civil War, and his incorrigible spirit brought him in collision with the Federal military authority. At one time he was remanded and sent to Fort Jackson. Federal soldiers were among his patients, but they were treated always without a fee. He was never susceptible of reconstruction.

He was a member of the local medical societies, the Physico-Medical and Medico-Chirurgical, the Louisiana State Medical Society, and the American Medical Association, of which he was the Vice-President in 1869.

In his day in the South he could not escape election as surgeon on the field of honor. Once, early in his professional career, while discharging this duty one of the principals fell mortally wounded. He deliberately picked up the man and conveyed him into the city from the Bayou Bridge. His herculean strength and his strong will made him equal to any emergency.

Realizing that no biographer can adequately portray traits of character in one whom he had never known in life, we have asked permission of Professor Chaillé to present here a personal letter, written at our solicitation, which gives an insight into his remarkable character.

MEDICAL DEPARTMENT, TULANE UNIVERSITY OF LOUISIANA,
NEW ORLEANS, January, 1894.

DEAR DOCTOR: You request me to state what were the characteristics and what the professional accomplishments which so greatly distinguished Dr. Warren Stone.

His unusual height and weight sufficed to attract marked attention, and this was intensified by his large and rugged head and by the imposing strength of features, which were not handsome. In addition to this striking personality he possessed, as Dr. T. G. Richardson, his friend, colleague, and successor used to declare, the greatest brain and the greatest heart of any man in New Orleans. It has been my good fortune to have personally known many of the most distinguished men of my time—statesmen and political leaders, soldiers and preachers, lawyers and doctors—and I testify that of all these great and famous men not one of them impressed me as having been endowed by nature with intellectual power equal to that of Dr. Stone. His hard common sense wedged its way into every vital question, and the profoundest scholars would be astonished with the depth of his views in matters which had not been specially studied by him. One of my tests of mental superiority has long been the *suggestiveness* of a man's conversation, the extent to which he stimulates mental activity, and I have known no man Dr. Stone's equal in this regard. Let him talk on any subject, and, even if you disagree with him, he would force you to think, and very probably to reinvestigate and to reconsider your own conclusions.

His language was so simple, direct, pithy, and saturated with common sense that he was always forcible and always easily understood, even by the ignorant. He knew, too, when he did not know, and, as unpretentiously as a baby, he never hesitated to avow his ignorance.

Dr. Stone was exceptionally sympathetic and congenial, frank and truthful, generous and magnanimous, and he had infinite charity for human frailties. He spoke evil of others rarely and very reluctantly, and only when needful to protect others from the vicious. He declared that those who spoke evil of others were those who were most prone themselves to do evil and who were least deserving of credence or notice. As frequently as occasion arose he would remind others that two wrongs can never make a right.

He was regardless of dress, and also of fashionable conventionalities to an extent awfully shocking to dudes and dudesses, and his solecisms were often so amusing that they would excite his friends to shouts of laughter. He detested pretension of every kind, and I have known him guilty of what his victims

denounced as gross rudeness to some fashionable, rich, pretentious swell, suffering with imaginary disease, and within a few minutes show as much tenderness as mother to babe over some ragged working woman weighed down with poverty, misery, and disease.

Dr. Stone was a very enthusiastic Democrat, yet greatly admired and often quoted Daniel Webster, the great Whig leader. Once I asked, "Doctor, how is it that you, such a Democrat, are so fond of Webster?" He replied, "What on earth have my politics to do with my ardent admiration for Webster's great talents?" He was ever too magnanimous to hesitate to praise the merits of even his opponents. He was a Democrat not only in politics, but also in his tastes, infinitely preferring a laborer if intelligent to a gentleman if stupid.

Notwithstanding his Northern birth and education, he was as enthusiastic a Confederate as Democrat, and was a great friend and admirer of Jefferson Davis. After several interviews with Mr. Davis when President of the Confederacy, Dr. Stone said of him: "Some men know a little of many things; some men much of a few things; but Jeff. Davis knows more of everything than any man I ever knew.

Notwithstanding the defects of his early education, Dr. Stone was an exceptionally well-informed man, owing this to the fact that he sought the company of the best-informed men, and was a great reader of the very best authors. He was as notable for forgiveness to enemies as for fidelity to friends. He sought always to promote peace and good-will; and to his numerous high qualities it was due that no man's advice was oftener sought for and more confidently followed.

Of his rare and superior characteristics, probably none served better to promote his great popularity than his inexhaustible wit and humor. His innumerable jokes and pithy sayings became current among the people from the Ohio to the Mississippi's mouth. He would go with one companion into a club or other place where men congregate, and start this companion to laughing; others would quickly be attracted, and soon a crowd would gather around him shouting with laughter.

He was, as are all great surgeons, not only a great surgeon, but also a great physician. His experience and knowledge of yellow fever were unsurpassed.

Dr. Stone was a remarkably close and accurate observer, and had an exceptionally superior knowledge of anatomy; and one of his many good sayings was that "the doctor who learns his anatomy from wax preparations and plates should operate solely on them." Though neither a quick nor graceful operator, yet his thorough knowledge of anatomy enabled him to be a very sure and safe one. He was a very skilful diagnostician, and I think he surpassed in prognosis any one whom I have ever known. His profession, with unanimity, conceded to him special and unexcelled superiority in deciding whether an operation should be performed, how and when it should be done, and what subsequent treatment the patient required.

To his superior characteristics as a man, and specially to his superior knowledge and judgment as to disease and injuries, he owed the very distinguished professional reputation he enjoyed—a reputation which would have left greater and more endearing proofs, and would have shown with greater lustre, but for the defects of his early education, which rendered literary composition always an unwelcome and grievous task, and the results of such tasks always most unsatisfactory to himself.

Very truly, your friend,

STANFORD E. CHAILLÉ, M.D.

A few words more, with your permission, Mr. President, and we will have concluded the sketch of this eventful and useful life. In the spring of 1872, owing to failing health, he retired from all active professional work, and sought recuperation in travel, while away, visiting his venerable mother, who then resided with her daughter at Brattleboro, Vermont. He returned to New Orleans early in the autumn, suffering of the final symptoms of diabetes mellitus, and died in his own home on the 6th of December at the age of sixty-four years. His wife and three children survived him—two sons and a daughter. The mother survived her sons, and died in 1892. The daughter, with her family, resides in the old home.

With the rites of the Catholic Church his remains were put away in the Cypress Grove Cemetery, situated in the suburbs

between New Orleans and Lake Ponchartrain. The genius of the man still lives, and in loving remembrance of him, his professional labors in their midst for forty years, and his unbounded benevolence, the people of Louisiana have woven the name of Warren Stone inseparably into their traditions of his day.

REMINISCENCES OF DR. J. MARION SIMS IN PARIS.

By Edmond Souchon, M.D.,
New Orleans, La.

I have often related to my friends the manner in which I happened to meet our surgical genius, Dr. J. Marion Sims, in Paris, and his first experiences in the French capital. They all were much interested in this, as they were in everything pertaining to this great and good man, and they repeatedly asked me to write out the little story for the benefit of the profession at large.

I, to-day, comply with this wish, regretting very deeply for all concerned that my pen is not more gifted, so as to do better justice to my hero and to my readers.

In the fall of 1860 I entered the old Charity Hospital on the Rue Jacob as a benevolent student in the service of the venerable and world-renowned Professor Velpeau. It was my first beginning in the study of medicine.

Facilities to beginners over there are not so great as they are here, in our Southern hospitals especially; and in order to have a chance to come in close contact with the professor and the patients, I, a simple voluntary student of the service, had to be over-zealous with all, particularly the all-powerful internes or lords of the service. After several months of trial I had succeeded in ingratiating myself with them all, and, having been intrusted with the registration-book of the in-coming and out-going patients, with the number of the bed, diagnosis, and dates, I had managed to be on as fairly good terms with Professor Velpeau as a little, insignificant nobody like myself could be with such a magnate as was the great Velpeau in such a

place as the great Paris at that period. This may seem rather hard to American students, but it is all true, none the less.

One early morning in October, 1861—the year the War of Secession broke out—I was going to the hospital, and as I was about entering the gate my attention was attracted at once by the face and appearance of a man who was coming toward the gate also, but from the opposite direction. That the face and appearance struck me at once will readily be believed by all those who have had the happiness of knowing our great American surgeon. Its characteristic soft and sweet expression, together with his deep-set, bright eyes and prominent, bushy eyebrows, the half-smiling expression of his mouth left uncovered by the absence of mustache or beard, made a much deeper impression on me than a glance ordinarily produces. I also at once recognized that he was a foreigner, and no Englishman at that, but surely and unmistakably an American—perhaps, hastily thought my young rebel heart, a Southerner; he must be that, I thought immediately afterward, because he looked so gentle and good, and yet withal so firm, so self-reliant.

All this took but a few seconds, and I continued my course toward the ward to which I was assigned, walking through the yards with another student, and the stranger coming up behind. When I reached the door of my ward I went through and closed it; it was soon opened again and closed; turning around, I noticed my "American." The Doctor told me, later, that at the foot of the stairs the other student went in another direction than I, and he was perplexed for a moment as to which one he would follow; after a little hesitation he said to himself, "Well, I think I will stick to the little one." The little one was myself!

I walked to the bed of the patient who took care of the white aprons the students wear over there to protect their clothes, and as I was putting it on the stranger came up to me and, after a most suave bow, said—in a very slow and deliberate manner, that the Frenchman he thought he was addressing might have some chance of understanding: "Will—Professor—Velpeau—

be—here—to-day?" I burst out laughing, and answered him in fluent English: "No, sir; Professor Velpeau is absent on his vacation, and will not return before two weeks." The beautiful face brightened up at the sound of the English language where and when he so little expected it. "Where are you from," said he, "that you speak English?" "I am from the South—from New Orleans," said I, thinking that that would cool his enthusiasm if he was a Yankee. But far from it; he grasped my hand and pressed it so as to crush it. "Why," said he, "I also am a Southerner; I lived a long time in Montgomery, Alabama." That made us friends at once.

I showed the Doctor around the hospital, and finally asked him what he had come over here for.

"Well," said he, "I am Dr. Marion Sims, now living in New York, who has invented a method of operating for vesico-vaginal fistula with almost invariable success." He looked at me to see if the name had made any impression on me; but it fell flat; we had never heard of Dr. Marion Sims in Paris. Furthermore, we all knew that nobody in the world knew anything about vesico-vaginal fistulæ except Professor Jobert de Lamballe, of the Hôtel-Dieu, and, even under him, vesico-vaginal fistulæ were cured only exceptionally, even when using his procédé de glissement (sliding process), and the idea of this new man coming to Paris to teach French surgeons how to cure vesico-vaginal fistulæ almost infallibly somewhat shook my faith in my new friend.

He said he had a letter for Professor Velpeau from Dr. Valentine Mott, of New York; that he was anxious to see the Professor, to get a case to operate on before him, and thus to demonstrate his method. "Well," I said, "the Professor will be here in some fifteen days;" soon enough for your good, I thought to myself.

During that time the Doctor was living in a little boarding-house in Rue de l'Université, close to the hospital. He had invited me to dinner upon our very first meeting, and I went there once or twice to give him all the points about those men

he was most likely to meet. He was all the time sanguinely confident, and looked so sweet, so modest, so magnetic that I began to feel a very strong drawing toward him, and by the time Velpeau was to return I was wound up to a high pitch and as eager as my friend that he should have a case soon.

Finally Professor Velpeau arrived, and I sent word to Dr. Sims immediately; he soon came to present his letter, which Velpeau read at once and fluently; but when it came to speaking to Dr. Sims he was at a loss to express himself, and looked around for me. It was always the case when prominent English visitors came to the hospital. Although the Englishmen read and wrote French as well as the Frenchmen read and wrote English—a great deal better than I could then—yet when it came to talking they had the greatest difficulty in understanding each other, and I was always hunted up to help them along.

At that time Velpeau was nearing the end of a most hard-worked career, and although age and success had softened him, yet he still bore the effects of his lowly, rough, peasant birth and of his hard-earned victory; at times the stiff haughtiness of the former years of struggle came over him. It did so to some extent at that time, and he was not to Sims exactly what he should have been, as I thought, and his coldness to him made my heart ache somewhat, as I took that to be of ill omen. The truth was that the name American at that time in Paris always evoked the name of Barnum, and the fact that a comparatively young surgeon posed as a successful operator on vesico-vaginal fistula when scarcely anyone, not even Jobert de Lamballe, ever succeeded in Paris, had rather prejudiced Velpeau against Sims.

After a few—very few—words, Velpeau said to me: "Eh bien, que veut il?" "Well, what does he want?" I translated the sentence to Sims, who at once modestly but firmly answered: "I want a case to demonstrate my operation, if the Professor will be kind enough to procure one for me." "All right," said Velpeau, "I will get him one," in a way that showed he had but little confidence in the final result. Then

he turned around, without a handshake or a word more to Sims, and went on with his visit. I felt quite hurt, but could say, and said, nothing; Velpeau was the idol of all young aspiring surgeons, the demi-god of the day. Nélaton was just looming up then, and had not as yet had his famous Garibaldi case which gave him worldwide fame.

For several days no case turned up; Sims was there every morning. I would introduce him to the younger surgeons who always swarmed around the old master, that he might not forget them. To everyone who inquired about his object, he said: "I want a case;" and I myself would then also say, "He wants a case."

At last the case came! and, just as luck would have it, a case of moderate difficulty. "Thank the Lord!" said I, with my American pride roused now to a high pitch for fear Sims should fail. When he told me he was *sure* to succeed it was a great relief.

By this time the whole of the old Quartier-Latin had heard of the news, which had rapidly spread from hospital to hospital.

On the day of the operation the famous little operating-theatre in the old Charity Hospital was overcrowded with students, and the arena below crowded also with the most distinguished professors of surgery of the French capital: Velpeau, Nélaton, Ricord, Malgaigne, etc.—all but Jobert de Lamballe, who would not come.

Before beginning the operation Dr. Sims proceeded to demonstrate it graphically by using a piece of thick and hard cotton-batting, through which he cut a hole representing the fistula; then he pared the edges slantingly in one strip; next he passed the silk threads and the wires, etc. The Doctor called on me to translate for him as he spoke. I was not expecting this, and before such an audience, and I felt shy and scared, but he so insisted with his sweet eyes and smile that I got up, trembling all over, and with a quivering voice would repeat in French each sentence as he uttered it in English. Gradually, however, I found that it was not so very hard; I became emboldened, and went through the whole procedure with comparative comfort.

After the demonstration Dr. Sims proceeded with the operation, which he performed with the skill and grace which characterized him. It was done in comparatively no time, closely watched and followed all the time by the French professors. When the Doctor finally said it was done a salvo of applause broke out from the benches; the professors rendered justice to the manner in which the operation had been performed, while reserving themselves mentally until the day when the sutures should be removed.

Dr. Sims attended to that case himself in the ward, and during the following days felt all along confident that it would be a success; and a success—a tremendous success—it turned out to be!

On the ninth day the same amphitheatre was again packed to witness the removal of the sutures; the case was pronounced cured, and this was confirmed by the French surgeons, who congratulated Dr. Sims.

The enthusiasm of the French students far exceeded their former outburst, and, since they could not very well carry Dr. Sims on their shoulders in triumph, they took hold of me in his place, and the resident students carried me to their mess-room to breakfast with them, a great and unprecedented honor in those days, for I was but a vulgar, simple, insignificant first-year student! I did more talking than eating, and the result of the excitement of mind and of heart was a very fine, first-class headache that sent me to bed and lasted twenty-four hours.

However, some seemed to think that it might have been a chance cure. But these were soon to be set right.

Immediately after the success of the first case Dr. Sims started on the war-path for another, which was soon promised for him by a physician in private practice. But this case came very near being a Waterloo. It was taken to a private place, the Hôtel Voltaire, on the Quai Voltaire. The patient was a short, fat, stumpy little woman and very obstinate. She all of a sudden absolutely refused to be operated upon unless she was given chloroform and put fast asleep. This much annoyed Dr.

Sims, because in those days it was not thought quite safe to place a patient on the left side—the side of the heart—to give chloroform to the extent of keeping her perfectly still, since nothing could be done otherwise, and for such a long period as an hour or two. We were far, then, from the ideas of the present day. There was no overcoming her stubbornness, and her will had to be done. It all went well for a while—a good while ; but all at once the breathing became stertorous, the face blue, and the pulse flagged. The operation had to be suspended until she recovered. The operation was then resumed, but soon had to be stopped again for the same reasons. Things were looking a little blue and as though the operator would not be able to complete the operation. But it was not to be so ; it was to be completed, but it took Sims's whole nerve and skill to bring it to completion. During all that time the distinguished guests present said and did nothing, leaving Sims and his assistants to do all the fighting and get all the odium in case of failure, but all the credit in case of success. At one time I spoke to Velpeau to ask him what he thought of the condition of the patient ; he shook his old, silvery head, and I imparted to Sims what I took that to mean, that he might make the best of it. Finally the patient rallied and was put to bed. At the end of the usual time this case was also pronounced a success.

A couple of weeks later Professor Jarjavay secured another case, upon which Dr. Sims operated at the Hôpital St. Antoine. At the time of the removal of the sutures, a week or so later, Dr. Sims was not pleased with the appearance of the parts, and expressed his apprehension of some ulceration setting in and destroying the work done to a greater or less extent. Professor Jarjavay said that even if there was a "fistulette" (a small fistula) left it would not matter much. Although he seemed to say this in a good spirit, yet it occurred to some that some people would be glad to hail this as a failure of the so-called infallible American method. But no fistulette occurred, and that case was also placed on record as a complete success.

From that time on cases were quite frequent, and naturally so, since hardly any were ever cured before; the stock of fistulæ was very great, and cases were not wanting. It was specially in private practice that they appeared to be abundant, and Dr. Sims scored success after success with the greatest ease. However, he again struck another hard case, even a worse one than the one of the Hotel Voltaire; it was the famous case of the "Countess" out in the country, in a chateau, a patient of Professor Nélaton. She also insisted upon taking chloroform, and when the operation was about half through she showed all at once most alarming symptoms. It was then that Nélaton uttered the legendary cry, "Head down," which everyone conversant with these matters must remember. After much and still more anxiety the poor illustrious patient was revived and the operation was safely completed. It turned out also a complete success.

Cases followed one another wherever the Doctor went. In Paris, London, Germany, etc., he was kept busy with fistulæ and other female cases. It was he who, then, sowed the first seeds of gynecological science and art throughout Europe, the science so eminently and thoroughly American.

Wherever Sims went he coined money, although he incessantly, willingly, and kindly did much charity work. He was the only man I ever knew or heard of who had such a vogue wherever he went. No French, English, or German surgeon could go to the capital of another country and have such calls and such success, no matter how great he was considered at home.

Dr. Sims made a host of friends among the surgeons of all countries, and it could not be otherwise with his gentle, kind, unpretentious ways. However, some of his easy-going American professional ways did not suit all of them, and some became a trifle cold and reserved toward him. Perhaps they were glad to find some flaw, ever so trifling, in such a beautiful gem. Surely, if they could have read thoroughly through his pure and simple heart and mind, they would have seen how unintentional were his ways and how little he thought he was giving any offence or had any idea he was doing wrong.

Sometime after all this the Doctor brought his family over to live in Paris. From that time on the Doctor's history is known to all Americans proud of the surgical genius born in our great land.

One day he said, in a burst of kindness: "How fortunate it was for me to have met you that morning I went to the old Charity. I was so thoroughly discouraged that I had about made up my mind to go back home!" Of course, it was his goodness which made him express it that way and with such force, for he surely would have met someone else to play the rôle I was so fortunate and so happy to perform.

He spent his money lavishly; all the needy Southerners and Northerners then in Paris were recipients of his generosity.

One day, in his house in the Rue de Balzac, we were alone in his studio, when he all at once asked me: "How are you getting along here, anyhow?" "Well," I said, "I am starving as slowly as I can. All resources from home have ceased since the war has begun, and but for a little position of twenty dollars a month which Professor Velpeau's influence secured for me I would have succumbed to hunger and cold by this time." He replied: "Anything you need I will be glad to give you; I am making plenty of money now." I thanked him very much, but gratefully declined any assistance, because, if I borrowed, I intended to return it some day, and just then it was rather problematical if I should last to return and pay any indebtedness. However, he would not be contented unless I promised him to come to him if ever I needed any help. All this was said and done with a simplicity which was overwhelming, especially to one accustomed by recent education and association to the good but exuberant French people.

The following year, however, was the time for me to prepare for my competitive examination for the "interneship"—*i. e.*, to be admitted a resident student in the Paris hospitals. That examination is, over there, the pons asinorum. It is held as the proof that there is something in the man, and, in fact, very few are those who attain any eminence in Paris who have not gone through that ordeal. It is really a very hard competitive

examination, and it requires all the time of any student from early morning till late in the night to suceeed. Very few succeeded the first time; usually it required two trials at one year's interval. I had to do it in one year or quit the study of medicine. I needed, therefore, every moment of the days of the year of preparation, and therefore it was necessary for me to renounce my little situation. Now if I could not get Dr. Sims to assist me, as he once proposed to do, what would become of poor me? Of course, he had offered his assistance, but that was nearly two years ago, and perhaps he had changed his mind since; or could he still afford to do it, now that he had a large family to provide for in a gay and expensive capital?

I called at his house, then in Rue de Suresnes, so familliar to so many Americans, but he was out of town and would not be back for some time. When? No one could say positively; he was in London, they said, and very busy there. Yet time was flying and I had to take a decision, and no Dr. Sims! But at last he returned. I called in the middle of the day, thinking I had then a better chance of meeting him alone. He was, in fact, alone, taking his lunch; as usual, he greeted me with his kind look, sweet smile, and hearty shake of the hand. He invited me to lunch with him, and I sat down to the table, but I could not swallow a morsel: my mouth was dry, my throat contracted, and my heart beating very fast. After a little trivial talk I summoned up all my courage and said to him: "Doctor, you once told me that if ever I was in need to come to you, and that you would help me along. Well, I am now in the greatest distress, and upon you depends my whole future." "Why, what has happened, Souchon?" said he, with concern in his dear face. "Well, sir," said I, "I have to give up my little situation in order to prepare for my examination for the residenceship of the hospitals, and unless you give me, to-day, the assistance you offered two years ago, it will be impossible for me to do so and I must give up the study of medicine." "Oh, no!" said he, "don't do that; I will help you certainly; how much do you want?" It was said with such natural kindness and simplicity that my heart sank within me. I felt

as if a thousand pounds had been removed from my breast! "Thirty dollars per month will suffice," said I. "What!" said he, "a dollar only a day. Oh, no; take two." I thanked him very gratefully, but consented to accept only one dollar and a half a day, remarking that I might never be able to return that little even. "All right," said he; "I will take my chance on that." He retired to his library and soon returned with a check for the first month in advance, and also for several hundred francs to buy some little furniture and clothing, which he said I very likely needed. I should think I did need them! From that time the check came every month, no matter where he was—in France, England, Germany, or America. He never forgot it once, and when it happened very rarely that he was a few days behind, he would write a few words of apology.

When at last I was so fortunate as to succeed in my examination and I telegraphed to him in London, he immediately wired back that the news had sent a thrill of joy through the whole family; this, in its turn, sent a thrill of joy through me also.

The Doctor's reputation had acquired such proportions that the French Government presented him with the decoration of Knight of the Legion of Honor, the highest ambition of all Frenchmen. It so happened that I was present in the forenoon of the day when the mounted dragoon from the State Office brought the large many-sealed envelope containing the brevet. It was the cause of great rejoicing in the family and among his friends. He himself did not believe very much in such trinkets, but he was happy because all around him were happy. I was dispatched to go down to the Palais-Royal to buy the ribbon worn in the buttonhole. I choose it as nice and neat as I thought he would like, and brought it home, when I had the happiness of being asked to place it myself in the buttonhole on the left side, over his noble and good heart.

Another notable instance of his great kindness is, when upon a visit through a London hospital the physician in charge told him that he had in his ward a Confederate surgeon who,

heart-broken, had left the down-trodden South to seek some rest somewhere. He had worked his passage through to London by acting as steward on board ship; but after he had reached London, his little money, his feeble health, his crushed heart had all given way, and he had stranded in a London hospital. Sims at once went to him, recognized a friend from the same grand State of Alabama, cheered him, saw him well, and brought him to his own house and assisted him back home. All this I was told by the man himself, who, upon his return home, became a most noted teacher of medicine in one of our famed Southern medical colleges.

I remember Dr. Sims in only one case of sickness. He was alone in the Grand Hotel in Paris, without any of his family with him, when he sent me word to come and see him. He had been suffering for some time from a repetition of an attack of pain and swelling in the right iliac region, and seemed concerned about his condition. Surely, if it had been a few years later he would have been appendicitized. But, thank God, he got well without the knife.

Alas! but that no human happiness is ever without a dark cloud. It was my distressing lot to be present at his house when the sad news came of the death of his eldest son, Granville. It was but a short message, quickly read, followed by a cry and a sob: "Oh, God! Granville is dead!" Granville had torn himself away from Paris and his family and gone to Havana to find a chance of running the blockade. He was there waiting for his opportunity, when he was attacked with yellow fever and succumbed very quickly.

Much more could be said of this great and good man during his stay in Paris, but it would require some one abler than I am to do justice to such a subject. He was surely one of the most magnetic men I ever met, and he made such a deep impression on me by his genius, his energy, his courage, his goodness, his kindness, and his gentleness that for many years of the early part of my life he was the model and the guiding-star I strove to follow.

GONORRHŒA IN WOMEN.

By J. B. S. Holmes, M.D.,
Atlanta, Ga.

There is no disease that affects women that should engage the serious and thoughtful consideration of the physician more than gonorrhœa, that deadliest of all enemies to female health. Most of us, that is, the members of this Association, who began the practice of our profession twenty to twenty-five years ago, were taught to regard gonorrhœa in the female as a most trivial disease—nothing more than a vaginitis, easily cured by a few injections with some simple astringent. I well remember in my college days that a distinguished Philadelphia professor, now dead, taught us that equal parts of apple vinegar and cold water thrown into the vagina was a sure cure, an absolute specific. I wrote down this prescription in the beginning of my professional career, and as my work was largely in the lower classes, where gonorrhœa is often found, God only knows how many women I left ultimately to be relieved only by the surgeon's knife. Doubtless many of my hearers, especially the older ones, having received the same teaching, have also furnished their quota for the operating-table. Happily science has thrown much light upon this formerly very dark field of our professional labor, and the man who now lightly treats gonorrhœa in the woman is either ignorant of his professional duty, or, what is even worse, indifferent as to the result. So great an authority as Lawson Tait says: "Early in life I heard an eminent surgeon say that if he was doomed to have a venereal disease he would rather have syphilis than gonorrhœa. I marvelled and dis-

believed; but now I know that if he included women in his thoughts of the subject, he spoke truly. Syphilis is relatively a harmless disease. It may and does cause discomfort, distress, and even pain, but I doubt if it ever kills the woman. Even if it does, where syphilis kills ten, gonorrhœa kills its thousands, and it would take the suffering of one hundred cases of syphilis to make up for the long, weary years of agony of one case of gonorrhœal pyosalpinx." Truly such a statement from one of such broad learning and extensive experience as Mr. Tait must impress us with the great importance of the subject.

Sinclair says: "Surgeons until late years have accepted gonorrhœa as only a trifling incident, and it is clear that obstetricians who have had better opportunities for knowledge have entirely overlooked it. Modern gynecologists have unearthed the conclusion that it is a terrible and fatal scourge to women." The above language from Sinclair is strong, pointed, and undoubtedly true. I have no doubt that many of the chronic diseases of the ovaries and tubes that come under the observation of the gynecologist are due to gonorrhœa. In the majority of cases the poor woman is entirely ignorant of the fact that she has or has ever had any specific disease. Indeed, her husband may tell you, if examined or questioned, that months, or even years, before his marriage he was a subject of gonorrhœa, which was cured and has since shown no evidence of a return. Many of the higher authorities now seriously doubt whether gonorrhœa in the male is ever cured; that the subject may be apparently well for months, or even years, and under certain excesses, notably venereal, the urethritis, simple in character as he suspects, for he knows he has taken no risks, returns, and the wife is promptly affected; indeed, she may be without any perceptible return of the urethritis in the husband. From such excesses as above mentioned, the poison of the gonococcus which has been latent for so long, quietly resting in its bed, is aroused to fresh life and vigor, to do its deadly work upon the innocent and unsuspecting woman. As general practitioners we have all been too

careless in the treatment of gonorrhœa in the male. We have regarded it as a disease, under ordinary circumstances, easily cured, and have discharged our patients as well and ready for marriage soon after the discharge and other local symptoms have disappeared. Since science has removed the veil from our beclouded eyes we must look back with awe when we contemplate the danger and damage to the good women of our country caused by our ignorance. Certainly with the lights now before us, every man who has to deal with gonorrhœa in the male will be more careful, not only in its treatment and the persistence thereof, but especially in his advice as to the safety of marriage.

Mr. Tait says: "We know a man never really gets cured of gonorrhœa. Under any stimulus of wine or women it will come back and be effective. From the enormous number of cases of damaged uterine appendages that have come under my care in the young married women who have remained sterile after having been a few months married I am almost disposed to believe that it is unjustifiable for a man who has ever suffered from gonorrhœa to enter the marriage state at all." What a startling statement from so high an authority. While I am not prepared to accept the above as literally true, I do believe that no man who has been the subject of gonorrhœa should marry until he has tested fully the possibility of any latent trouble in the urethra by violent horseback exercise and the excessive indulgence, for a few days, in beer, and, if he can use it, tobacco also. If this shows no return of the trouble, he might, with great safety and prudence, wait a few months, and repeat the above, and if there is no return, it would probably be safe for him to marry; but, in every case he should be thoroughly familiar with the advanced views as to the possibility of his trouble returning to such an extent as to infect his wife.

Gonorrhœa in the female is not always easily diagnosed, and doubtless many hundreds of cases are passed by competent and intelligent physicians as a simple vaginitis. It must be remembered that the gonococcus cannot always be found in

the gonorrhœal virus, so, at least, some high authorities assert. On the other hand, the coccus is said to be found often in the troublesome vaginitis of children, where we know there has been no specific contact. Mr. Tait does not believe in the existence of the gonococcus as the cause of the disease, but more the result of it. In many cases of vaginitis it is often an impossibility to get a history of the specific infection, and it is often unwise to press our questions too far. The history of distinct and unmistakable infection is the only guide, and this is often impossible to obtain, for in many cases it is a delicate matter, and one that, as above mentioned, it is not well to press too far. The sudden occurrence, especially if with urethral symptoms, which, however, are not always present, of a vaginitis in a patient who has formerly been free from leucorrhœal discharges, absence of other causes to explain these symptoms, protracted duration of symptoms and resistance to treatment, tend very strong to convince us as to the specific nature of the trouble. Even in many cases where we are convinced beyond a doubt as to the real nature of the disease, the domestic unhappiness that would be occasioned by the expression of a positive opinion should often deter us from giving it, except in such cases as the cause is admitted. The urethra is much more apt to be involved in gonorrhœa than in simple vaginitis. Often it is swollen, tender, and frequently blood and pus escape from it. The pus from vaginitis of a specific nature is of a yellow or greenish color, and very ill-smelling; warts and condylomatous growths are apt to be found on the external genitals. Many, in fact most of the cases of acute gonorrhœa in women go to the family physician for advice. They are ignorant of even the possibility of any specific trouble, for they well know that no unfaithfulness to their husband has been practised, nor do they suspect infidelity on his part. The family physician, knowing the character of the lady and not fully realizing the possibility of redevelopment of the disease in the male, never suspects gonorrhœa, regards the trouble as trivial, and so treats it, when if its real nature had been recognized, and the

disease treated accordingly, the future ill-effects upon the poor woman might have been averted. Many cases of gonorrhœa occur when no vaginitis exists, at least to an extent to make it noticeable, the virus entering the uterus direct. The mucous membrane of the uterus is better fitted for the culture of the coccus than that of the vagina, because, most likely, of the unfavorable circumstances dependent on the acid secretion of the latter, together with the coexistence of the numerous bacteria that are always found in it. The gynecologist is rarely consulted until the uterus and its appendages are seriously involved, perhaps months or years having passed before he sees the patient. She is then probably broken in health, a great sufferer, perhaps bed-ridden, a confirmed invalid, with great pus sacs in the Fallopian tubes or ovaries, or both, but it is rare to have pus in the ovary without also having it in the tube. While the acute symptoms of gonorrhœa in the woman usually subside without immediate trouble, still there are, in my opinion, many cases of acute, and even fatal peritonitis where the cause has been and is clearly and undoubtedly due to acute gonorrhœa.

As has already been mentioned, there may be entire absence of vaginitis, the virus effecting the uterus direct, giving us sometimes an endometritis of the most intractable character, and may pass from the uterus to the tubes, ovaries and pelvic organs. The entire uterus, after awhile, will become affected, and by extension through the tubes we have pelvic peritonitis, resulting in adhesions of all the pelvic organs and causing an endless amount of suffering and pain, and finally resulting in chronic invalidism or death. Inflammation of the tubes soon results in a restriction in their calibre, as is clearly shown by the terrible suffering occurring frequently twenty-four to forty-eight hours before the menstrual flow begins. Finally the tube is entirely sealed at its uterine end, and we have hopeless and incurable sterility. Sinclair says: "A woman who has suffered from a gonorrhœal peritonitis is barren," and from a careful examination of many tubes, the subjects of gonorrhœal infection, I believe he is correct. Many of the cases

we see of sterility are doubtless due to an unsuspected and unrecognized gonorrhœa, a disease that the husband has as little suspected as the wife. Distention of the tube, the result of gonorrhœal inflammation, by water, blood or pus is frequently found, and more suffering from the latter cause is produced by gonorrhœa than all other troubles due to it combined. The poor woman soon becomes a confirmed invalid, looking to the return of each menstruation with dread and horror, for she well knows the pain and suffering that await her. Her digestion is deranged, her nutrition impaired, and she becomes weak, exhausted and unable to stand or walk without the greatest suffering; the approach of her husband is productive of most intense pain, and in short she never knows a moment of relief from her suffering. Such a picture, I am sure, should enlist the most determined effort on our part to arrest the spread and extension of the gonorrhœal virus. Many cases of abortion are due to changes in the uterine mucous membrane from gonorrhœa. Many of the cases of the so-called puerperal fever are due to the rupture during labor of a pyosalpinx, most likely of gonorrhœal origin. One tube has remained patulous and healthy, while the other was the seat of an undetected pus sac. Rupture of these produce septic peritonitis, or so-called puerperal fever. Of course, the presence of pus in the tubes is much more dangerous to the woman during pregnancy and labor than at any other time Many cases of ruptured pus tubes have resulted in death to the poor woman, when the cause has been overlooked and perhaps attributed to other things. Thousands of cases of ophthalmia neonatorum, resulting in blindness to many children, is traceable directly to an unsuspected gonorrhœa in the mother. Happily the obstetricians of the country are realizing the importance of gonorrhœa in its relations as a causative factor in producing this disease, and now, I am glad to say, the number of cases is very greatly reduced, and I predict that in the near future it will be an affection seldom met with; and when it *is* met it is due entirely to the carelessness and ignorance of the attending obstetrician. So high an authority

as Dr. J. Price, of Philadelphia, regards fibroids as caused, in many instances, by gonorrhœal inflammation of the uterus. Cystitis, sometimes of a severe character, the result of gonorrhœal inflammation, is occasionally met with. I might mention other complications in connection with gonorrhœa, but will desist for fear of making this paper too long.

In regard to treatment: The patient should be kept as quiet as possible and the diet made simple and plain. The bowels should be kept open, preferably by salines. Cleanse the vulva and vagina thoroughly with soft cotton and a solution of bichloride of mercury 1 : 1000. Do not, under any circumstances, use, either for cleansing or applying remedies, vagina douches, as there is too much risk, in this way, of carrying the disease into the uterus. After thoroughly cleansing, brush the affected parts thoroughly with carbolic acid and glycerin, equal parts, and then dry well and blow over all diseased surface a powder of iodoform and boric acid, 1 : 4. Then fill the vagina with iodoform or sublimated gauze and cover the vulva with a pad of the same. Repeat this daily, or, if too much irritation should be produced from the application, then repeat only every second, third or fourth day, but cleanse the parts daily and reapply the dry dressings. I have sometimes used, instead of the carbolic acid and glycerin, nitrate of silver, one drachm to an ounce of water. Good results are also obtained by inserting daily, after the cleansing, a suppository of ten grains each of tannic acid and iodoform, with cocoa butter, allowing this to remain twenty-four hours, when the parts are again cleansed and the suppository is again introduced. I, however, like the dry treatment better. For the urethritis I use a two-grain solution of nitrate of silver applied to the mucous membrane, with aseptic absorbent cotton wrapped on an applicator, once a day. A pencil of two to four grains of iodoform prepared with cocoa butter inserted into the urethra is an excellent application. Weak injections daily into the urethra of sulphocarbolate of zinc, five grains to an ounce of water, is also an excellent remedy; of course keeping the urine alkaline and diluted as much as possible by

securing a free flow, which I have generally been able to get by having my patient drink freely of Bowden Lithia water. In cases of cystitis I have also advised the free use of Bowden Lithia water, and have given ten grains of benzoate of soda, with a capsule of three to five drops of Venice turpentine four or five times daily, having the bladder washed once a day with a warm boric acid solution, four to eight grains to the ounce of water. The warts can usually be relieved by dusting them freely with a powder of calomel and starch, 1 : 4, and, should this not prove effective, clip them off with the scissors and touch their base with pure carbolic acid. If the endometritis is seen before the tubes become involved I would, after a most thorough cleansing of the vagina, dilate and curette the uterus, wash it thoroughly with a bichloride solution 1 : 2000, brush the endometrium with pure carbolic acid and pack lightly with iodoform gauze. If the tubes, ovaries, and pelvic peritoneum should be inflamed, I would purge the patient freely with salines, giving chlorate and citrate of potash with quinine freely. If the temperature should be excessive, the patient restless and nervous, I would use phenacetin as a sedative, avoiding opiates of every character. If the peritonitis did not yield to this treatment I would unhesitatingly open the abdomen and irrigate with gallons of sterilized water, then drain, using the glass tube for this purpose. Locally I would apply glycerin and boric acid tampons in the vagina, and use hot water rectal and vaginal douches. Poultices and blisters are of no value, but where the temperature was high would use the ice coil over the abdomen. If pus should form in the tubes there is but one remedy, a removal by abdominal section. It is worse than foolish to attempt to drain them by gauze in the uterus. It cannot be done; nor can I understand how this line of treatment can be advocated. To convince the most skeptical it is only necessary that they should examine a few tubes filled with pus, where there will be found from one to a half-dozen or more impermeable strictures so dense and tight that in attempting to pass the smallest probe it will be found impossible to accomplish it. It will pass

through the walls of the tubes at any point except the one of constriction. With this condition of things is drainage by capillarity possible? Most assuredly not.

Not only does this line of treatment offer no relief to the poor woman, but I can conceive of nothing more dangerous than curetting the uterus in the presence of immense pus tubes with pelvic adhesions. The drawing down of the organ necessary for curettage may break up pelvic adhesions and pour out the contents of pus sacs into the peritoneal cavity, which would result, in the majority of cases, in death to the woman. If her life is saved at all, it will only be done by a prompt abdominal section, with thorough irrigation and drainage of the abdomen. Then why not, in the first instance, when pus is detected, promptly remove it by surgical procedure? You then treat the woman rationally, and give her the very best and only chance of relief and restoration to health.

DISCUSSION.

Dr. George J. Engelmann, of St. Louis, Mo.—Mr. President: The paper of Dr. Holmes is a most pertinent and timely one, and whilst I agree with him in the main, yet there is one important point I wish to make, and that is, that in this, as in every discussion upon gonorrhœa and its results, we must clearly and decidedly make the distinction between *latent* or *chronic* and *acute* gonorrhœa. My experience with acute gonorrhœa is not a very large one, my clinic being fortunately of a character which does not furnish such material; but such as it is it has taught me not to look upon *acute* gonorrhœa as a dangerous disease in women. It is infection from the latent or chronic orm, unobserved in the male, which I look upon as dangerous to woman, as this is not perceived until it has crept beyond the controllable tract of the vagina into the inaccessible recesses of the ostia and the folds of the tubal canals; but acute gonorrhœa in the female is at once recognized: causes a violent discharge, pain, urethritis. Suffering and discharge force the patient to seek advice, and at this stage the disease is unmistakable; it is confined to the vulva and the thoroughly accessible and con-

trollable vaginal tract, and for this reason it is treated successfully in women, as it is not in men. I have certainly not seen the same serious results from the acute forms of the disease, but it is the insidious infection from a supposedly cured gonorrhœa in the male which is not detected until it produces the suffering the writer has so well depicted. Those cases we all see both in clinical and private practice; they are unfortunately so common. A young woman who has been in good health, has not suffered from pelvic troubles, no leucorrhœa or dysmenorrhœa, is married; within two or three months she experiences some little discomfort, perhaps a slight urethritis, but not necessarily; gradually some menstrual pain develops, and then come nervousness, lassitude, with depression, mental and physical, backache, and pains in the sides as the disease spreads to the uterus and tubes, and even beyond. That is, in brief, the typical history. The physician is consulted when at length the patient is convinced that something must be done for the general malaise and debility, as local symptoms are rarely prominent, in marked contrast to the acute form to which attention is called by discharge and suffering. Treatment is at once inaugurated, and, as a rule, it is successful. Let me suggest, however, an antiseptic and antiphlogistic treatment rather more mild than that indicated by the writer. I have given up the use of the painful, more or less, cauterizing remedies, nitrate of silver and its allies, and rely upon cleanliness, asepsis, and antisepsis, whether it is simply hot water or the bichloride of mercury. We should resort to frequent cleansing, as he suggests, and the permanent application of the dry powder, sedative and antiseptic, even slightly astringent, if you wish. We have had no ill-results following this line of treatment, and the cure is simple and effective. It is the latent, creeping form of the disease which is unobserved whilst in the vagina, and thus permits the gonococcus to enter uterus and tubes, where it is safely intrenched; the symptoms in the early stages are so trifling that they are not noted, and hence no treatment is instituted whilst the gonococcus is still confined to the vagina, where it could be reached. It is the latent infection which causes serious consequences.

To discuss this subject intelligently a distinction should be made between acute and latent infection. Only once have I seen violent symptoms immediately following latent infection;

hence I deem the case an instructive one: Mr. X. had been treated by prominent specialists in this country and abroad, and had married, after a microscopical examination had been made and permission given by the eminent specialist under whose care he then was and had been for months if not years. Not a gonococcus could he detect, and he doubtless believed that after years of treatment by various authorities he must be cured. He married, took a bridal trip down the Mississippi, and the young wife returned with a most violent and acute gonorrhœa, which, contrary to the usual course of the acute form, at once permeated the entire sexual tract from vulva to peritoneum. When I saw her she was in a very serious condition, heavily under the influence of opium, with a violent peritonitis. The disease had taken an acute and virulent form—acute vaginitis, endometritis, salpingitis, and peritonitis.

This is the only case which I have known of the kind in which latent, apparently controlled gonorrhœa in the male has led to violent and rapidly developing symptoms, all the intensity of the acute disease being combined with the extended range of the chronic in the recently-infected woman, and that woman has had a number of healthy children since. As a rule, the troublesome cases, which seek the aid of the gynecologist and frequently baffle his best efforts, as the doctor has so well described them, are those of chronic gonorrhœa—slowly and insidiously developing disease, referable to a latent, supposedly long since cured gonorrhœa in the male, in which the germ, after traversing the various mucous surfaces, has found secure lodgment in the tubes. Even removal of the tubes is not sure to give relief; total extirpation of the uterus must be resorted to, together with the tubes by the vagina, in order to destroy all of the foci of disease, because otherwise the uterus and the tubal ostia remain as a nidus for the gonococci and a starting-point for renewed mischief; the fact is that the patient is frequently not cured by simple salpingotomy.

Dr. Bedford Brown, of Alexandria, Va.—I desire to take some exceptions to the views of my friend, Dr. Englemann, in regard to the non-danger of acute gonorrhœa in females. I read a paper before this Association at one of our meetings on the subject of systemic infection from gonorrhœal infection, and in

that paper I cited a case of a female in which acute gonorrhœa ran its course, terminating finally in fatal nephritis. There was first urethritis, then cystitis, ureteritis, pyelitis, and finally acute nephritis. From the time of the development of this attack of gonorrhœa to the death of the patient it did not exceed two weeks, certainly not three. When the development of the nephritis came on the urine was loaded with albumin; the microscope revealed large quantities of casts, and the case terminated in uræmia, with all the peculiar symptoms of that disease, coma and death. That was one case of fatality resulting from acute gonorrhœa in the female. The gonorrhœal infection in this case, by the way, did not invade the uterus or the tubes, but it pursued its course through the urinary organs exclusively. I cited another case of a similar character in a female in which the disease pursued the same course. I have seen cases of gonorrhœa in the male which pursued the same course, and in one case there was pyonephrosis, with an enormous abscess in one kidney. This case recovered.

I also desire to say with reference to the perpetual infectious character of gonorrhœa as capable of being imparted from the male to the female, that I must take exception to that. I think these things are somewhat exaggerated. We know that a very large proportion of the male population have been subject to gonorrhœa. It is difficult to state how great that proportion is. At any rate, it is enormous, as I know not only from my own personal and extensive observation, but from that of others and my fellow-students. Many young men have been subject to this disease, and after a time they marry, their wives have children, they are healthy, and have large families. There is no uterine disease, and I am free to say that there are not only thousands but millions of such people. But, nevertheless, I do not wish to be misunderstood in conveying the idea that gonorrhœa is not an infectious disease, and that its infection is not dangerous, because I have cited two cases in proof of it, and I have in my mind's eye other cases in which females have been infected by it to a serious degree.

I am satisfied that a very great majority of males and females who have gonorrhœa recover entirely from the disease, and that in their cases it ceases to be infectious.

Dr. Richard Douglas, of Nashville, Tenn.—I have listened

to Dr. Holmes' paper with considerable interest, but there are some little points to which I desire to take exception. Mr. Tait is nothing if he is not extreme, and in accepting the views of Noeggerath he has carried them to an extreme. If Dr. Holmes takes the view that a woman who has had gonorrhœa is always a cripple, is necessarily an invalid, is never again well, then I must differ with him. I think Dr. Englemann has sounded the keynote in that there is quite a difference in the infection from an acute gonorrhœa and the latent form of the disease. An infection from the latter is a mixed one, not only with the specific germ—the gonococcus, but we have infection as well from the streptococcus and staphylococcus, and that accounts somewhat for the virulence of the trouble.

That gonorrhœa is the cause of uterine fibroid, I can scarcely accept. I believe Dr. Price is the author of that idea. When I saw his views on that subject I carefully reviewed my cases, and there are numbers of cases of fibroids that I have met with in which I know, beyond all doubt, that the women had never been exposed to gonorrhœal infection.

Acute gonorrhœa is amenable to treatment, but not by vaginal irrigation, not by douches, not by astringent injections, but by looking upon the vagina as an infected canal, and dealing with it accordingly, conducting the treatment of the case yourself, placing the patient upon the operating-table, and considering well the folds of the vagina, and that lurking in every fold there are germs of infection. Unless there be pus tubes, let the uterus alone. Do not disturb the uterus in the early stage of the disease. Keep the vagina clean. That is my method of treatment of gonorrhœa.

One more point, and I will have done. Dr. Holmes said that in his treatment of peritonitis consequent upon gonorrhœa he would open the abdomen, remove the pus tubes, and irrigate the general peritoneal cavity with gallons of hot water. While I advocate very strongly the cleansing of the peritoneal cavity, yet if we know anything by experience, we know that the inflammation consequent upon gonorrhœal infection is plastic, is localized, is exudative in character. Then why disseminate septic material throughout the general peritoneal cavity?

Dr. Joseph Taber Johnson, of Washington, D. C.—I presume Dr. Holmes means that he would wash out the peritoneal

cavity with gallons of hot water in those cases where the pus tubes rupture.

Dr. Holmes.—I thought I made myself clear in my paper, that I would wash out the peritoneal cavity with gallons of hot water in those cases where the pus tubes had ruptured or where pus was spilled in the general peritoneal cavity.

Dr. Johnson.—The Doctor would follow the rule, then, which guides all of us in these operations for removing pus tubes. I see no reason why any benefit should follow such extensive irrigation of the cavity when simply a large pus tube was removed which did not rupture at the operation. Here the "dry treatment" would be sufficient. There is nothing to be gained by drainage unless there is something to drain. In the treatment of pus-tubes which come from gonorrhœal infection, it seems to me the very radical suggestions of Dr. Holmes are correct. I think the experience of men who have had much to do with gonorrhœal pyosalpinx is that they are incurable by any of the conservative measures which are suggested by practitioners. Nothing short of total extirpation will permanently cure these patients. It seems to me the suggestion made by Dr. Engelmann is a good one—that in addition to the removal of the pus sacs, if both sides are involved, the uterus should be removed also, because it is through the infected mucous membrane of the uterus that the tubes themselves have become infected. If this radical procedure, which is recommended now by our New York and Philadelphia colleagues, is ever a justifiable operation on account of double pus tubes, it is the one operation that is more demanded in these cases than in almost any others, inasmuch as the seat of infection still remains in the uterus. While it is true that access to the abdominal cavity is cut off, still the local trouble which exists in the uterus remains uncured as long as the gonorrhœal trouble exists. I cannot go as far as some practitioners do when they speak of thousands of deaths having occurred as the result of gonorrhœa, thus making it a much more dangerous disease than syphilis. It seems to me quite true that the results of gonorrhœal infection are more injurious and fatal in their effects than are the results of syphilis. There are many syphilitic troubles that occur through involvement of the brain, spinal cord, and viscera generally that finally produce death, and until recently I have held the opinion that syphilis was much more

dangerous in its results than gonorrhœa. Syphilis is more successfully treated now than formerly. The practical lesson to be drawn from the paper is that we should devote ourselves more thoroughly and energetically to the early cure of cases of gonorrhœa than we ever have before, and thus prevent the occurrence of these dangerous pelvic complications.

Dr. William P. Nicolson, of Atlanta, Ga.—I have only a few words to say in reference to the subject under discussion. All of us, even those who are engaged in general surgery, are concerned in the treatment of gonorrhœa. Dr. Johnson has said, and Dr. Holmes has advocated, that we should use every effort to cure gonorrhœa. From the standpoint of the paper I should like to know when it is cured. We are told that a urethra that was inflamed has been restored to its normal condition. The patient has no further trouble, no discharge, and yet years afterward he transmits gonorrhœa. I must admit that it is hard for me to accept that doctrine. I know of no other tissue in the body in which infection behaves in this way; after there has been an apparent cure for months, or even years, the germ lies there ready to rise up again and pursue its work.

I agree fully with Dr. Brown in his statements with reference to the universal prevalence of this disease. We have all seen cases of gonorrhœa where the patient, on account of a contracted meatus or some remaining stricture, is liable to exacerbations. If a man goes for months and years with a gonorrhœa that absolutely produces no effect whatever, if he is not cured, how are we to tell him that he is not? We have been told in this paper, and by some of the speakers, that gonorrhœa is contracted by the female when there is absolutely no disturbance whatever of the urethra of the male, or that under such circumstances he can propagate the disease.

Gonorrhœa within the last few years seems to have assumed an enormous importance in the pathology of uterine disease, and this is a question where the general surgeon is concerned in advising his patients seeking advice as to marriage as to what they shall do. I must admit that on these grounds I am compelled to take exception to the extremely radical views that have been expressed upon that line.

Dr. A. M. Cartledge, of Louisville, Ky.—The interesting paper of Dr. Holmes suggests many points of more or less in-

terest. From the standpoint of the general surgeon, in discussing this paper, I would like, on general principles, to say a word in reference to the dry treatment of septic vaginitis. It seems to one who has observed the changes going on in acute vaginitis in the female, septic and specific in character, that the dry treatment instituted once a day with bichloride of mercury 1 to 1000 and the application of gauze, and changed only once in twenty-four hours, or once in three days, is not sufficient.

Dr. Holmes.—Once every twenty-four hours is the maximum point.

Dr. Cartledge.—I see no objection to carrying out the additional suggestion—and a very good one—of Dr. Douglas, and that is to place the patient on the table so that you can see what you are doing. While there may be danger in thoroughly irrigating these cases, it seems to me it would be quite an expensive undertaking, as far as time is concerned, to follow up the various folds or rugæ, and make applications of dry dressings. I do not believe that infection is carried up to the uterus, then to the tubes by injections into the vagina. Certainly in septic vaginitis, where women are walking and moving about, there are many conditions to account for extension by continuity of such specific vaginitis. I think we will gain more by thoroughly removing the secretion by irrigation, and there is less danger of causing extension of the specific inflammation, than by resorting to less efficient measures.

I would throw out the suggestion that I believe physicians generally are not so conscious of the prevalence of artificial abortion in young married women of all classes, the better as well as the lower, as they might be, and I believe in these cases of septic infection from pathogenic organisms we have a fertile source for the development of tubal disease—at any rate, more so than from gonorrhœa.

Dr. W. E. B. Davis, of Birmingham, Ala.—Gonorrhœa is unquestionably a dangerous disease, but Mr. Tait and others have greatly magnified its importance. As has been well said of Mr. Tait, he is very much inclined to be extreme in his views. Gonorrhœa is a frequent cause of tubal disease, and is often a factor in the production of puerperal inflammations. If a woman has suffered from gonorrhœa, and there is some slight trouble left in the tube, should she become pregnant the slight septic infec-

tion which usually follows abortions or delivery at term, and which would not cause trouble in healthy organs, would perhaps produce a pus tube in such a case. Some would call this a gonorrhœal pus tube, but this is not correct. A pus tube brought about by the staphylococcus or streptococcus should not be classified under the head of gonorrhœa. If in these cases we get pus in the peritoneal cavity, we have a serious condition. It is entirely different from what we have if the pus is from gonorrhœa. Of course, inasmuch as gonorrhœa prepares a favorable soil for the development and multiplication of septic germs, it is a dangerous disease; but if we say that gonorrhœa is ordinarily a fatal disease as we meet with it in so many cases, we are wrong. What we want to remember is that there is a difference in the inflammation produced by different germs. Many discuss peritonitis in such a way as to indicate that they do not have a proper conception of the disease. They state that they open the abdomen and turn out gallons of pus and save their patients. Cases of general peritonitis cannot be saved where the operator turns out gallons of pus, if the inflammation has been caused by such germs as the staphylococcus, streptococcus, or bacillus coli communis.

Dr. W. D. Haggard, of Nashville, Tenn.—I feel under obligations to Dr. Holmes for the able and exhaustive paper he has just read. It is one of the most comprehensive contributions on the subject I have seen for a considerable time. I rise only to place myself on record as being opposed to so radical a procedure as that of removing the uterus together with the ovaries and tubes for pyosalpinx caused from gonorrhœal infection. It is true the uterus was the original seat of infection and may be still infected, but as soon as ligation and removal of the tubes are effected all further egress of septic material from the fundal zone of the uterus ceases.

We then have a cavity with but one outlet—the os uteri—to deal with by dilatation, curettage, irrigation, and iodoform gauze packing, to say nothing of other resources, through which we can relieve any diseased condition left in the endometrium.

For these reasons I believe the removal of the uterus is not a justifiable operation for simple gonorrhœa, and repeat with emphasis that I desire to go on record in the proceedings of this Association as being opposed to such radical measures.

Dr. John D. S. Davis, of Birmingham, Ala.—Our experi-

ence is worth very little in connection with gonorrhœal inflammations in the pelvis unless we take the microscope and examine the discharge for the specific germs. It is important for us to make use of the microscope in diagnosing these cases. We should determine as far as possible whether the trouble is due to infection from either the staphylococcus or the streptococcus, which is really worse. In newly married women we have an inflammation of the vagina as a result of irritation from coition into which the streptococcus or staphylococcus is deposited, and you have an inflammation or suppuration that is more infectious and detrimental to the tubes than is really the gonococcus. I believe the combined experience of pelvic operators has demonstrated that the latent effects are not directly due to the gonorrhœa or gonococcus *per se*, but to what is called a mixed infection, but not, I believe, a mixed infection proper. We do not get such bad effects from the gonococcus alone, but have a mild inflammation as a result of the gonococcus that is fired up by another infection from the streptococcus, thus developing a more serious trouble. A slight inflammation in these cases caused by the gonococcus will be cared for by the system and produce very little trouble, but when we get another infection we will have a more serious condition terminating in a pus tube, suppurative peritonitis, and finally death of the patient, if we do not resort to surgical interference.

As intimated in the paper, as general practitioners and general surgeons we are too careless in our opinion in advising young men to get married. I do not advise a man to get married after having an attack of the disease until I have resorted to every possible means to bring back the inflammation. After failing to produce this inflammation or bad result, I have his urine examined with the microseope three or four times at intervals of five or six weeks, and failing to find pus in the urine at these separate examinations I will consent to his marriage. I had heretofore believed that gonorrhœa in the majority of cases was comparatively harmless in its remote effects—that is to say, in a large proportion of cases we seldom have resulting stricture, cystitis, prostatic troubles, etc. The inflammation from the gonococcus is not so harmful as we have been taught to believe by the pelvic surgeon.

Dr. Hunter McGuire, of Richmond, Va.—I desire to enter

a mild protest against the statements made with reference to gonorrhœa in males. I do not believe that every man who has had gonorrhœa should be advised not to marry. I have seen many men get well and stay well, and I must take issue with those gentlemen who make the statement that when a man has gonorrhœa he cannot get well. Before he is permitted to marry every slight stricture or mucous patch should be remedied.

Again, with reference to pus tubes, I must enter my protest against the doctrine of all pus tubes being gonorrhœal. I have removed pus tubes where there was not a suspicion of gonorrhœa, but that is not the subject under discussion.

Dr. Holmes (closing the discussion).—Many cases of acute gonorrhœa in women result in no secondary trouble, because they are early recognized and promptly cured by judicious treatment. I fully agree with Dr. Haggard that it is not necessary always to remove the uterus in these cases. Drs. Johnson and Douglas misunderstood me in regard to irrigation. I would not irrigate unless a pus sac had ruptured or there existed a general peritonitis; then I would. I clearly stated that I did not indorse the radical views of Mr. Tait, that gonorrhœa in the male is never cured; but I do insist that general practitioners are often too careless in advising the marriage of patients that have been the subjects of gonorrhœa. It is always safest and best to test the possibility of a return of the disease by different excesses already mentioned. I think it clearly the duty of the medical man to explain fully to male patients that have been the subjects of gonorrhœa the risk of latent infection.

SOME CASES OF ACUTE INTESTINAL OBSTRUCTION, WITH DEDUCTIONS.

By A. Morgan Cartledge, M.D.,
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The following cases briefly recount my experience in laparotomy for acute intestinal obstruction. As will be observed from the results, they constitute a gloomy page in my journal of abdominal work. It is the positive destructiveness of this affection to human life that makes it of such intense interest to the physician and surgeon. The limited number of operated cases here reported, together with an individual observation of probably as many more not subjected to operation, fully conform to the accepted belief of the hopeless nature of acute intestinal obstruction unless treated by early laparotomy.

Case I.—Male, aged twenty-four years, while wrestling brought down a right inguinal hernia. Taxis was applied by the attending physician and the tumor reduced with apparent relief to the patient. The following day the doctor found him much relieved, still there was pain which he referred to the region of the umbilicus. On the third day the physician was again called and found abdominal pain much more intense; morphia hypodermatically and a cathartic was given, as there had been no operation from the bowels. The evening of the same day found him about the same, he having rested easily most of the day from a narcotic; no action from the bowels. An enema brought away fecal matter, morphia was again given. Morning of the fourth day patient was resting badly; complained of great abdominal pain, which was described as like the pain felt during an attack of obstinate

constipation and bowel trouble from which he had suffered two years before, and on account of which his life was despaired of for ten days. Abdomen slightly tympanitic, with no tenderness or other symptoms in the recent hernial region. Temperature 101° F.; pulse 110. Had vomited rather freely once. Morphia again given, with the effect of quieting him through this the fourth day. The evening found him little changed, except the vomiting, which had increased and had changed from a watery mucus to a slightly green-tinged serum. Abdomen more swollen; enema fecal-stained, but no gas; respiration labored and limbs flexed in the attitude of peritonitis. Hot applications ordered and morphia hypodermatically. The physician informed the family that he strongly suspected a continuation of bowel-obstruction from some cause and suggested a consultation. I was requested the same night to see the patient early the next morning with Dr. Warner.

During the night of the fourth day he grew rapidly worse, vomiting frequently and in large quantities, the pulse becoming extremely weak and respiration much embarrassed from tympanites. Hiccough troublesome.

When I saw the patient on the morning of the fifth day at nine o'clock his condition was most serious; pulse 142, temperature 102° F., abdomen tense and very tympanitic, anxious expression of countenance, sunken eyes and weak voice. There was some hiccoughing. The quantity of vomited fluid greatly exceeded that imbibed, and was the green-tinged, sour-smelling serum characteristic of obstruction. No marked fecal odor was detected.

In consultation with the doctor we agreed upon immediate laparotomy as holding out the only hope of relief. The pulse of the patient improved slightly for an hour before being placed on the table.

Operation: Incision in the median line; peritoneum much engorged and thickened, with evidences of acute inflammation. The cavity contained a quantity of serum and lymph flakes. Thinking it probable the cause of obstruction was about the right internal ring, I explored this region first, and found such to be the case. Tracing by the sense of touch the intestine to this point, the imprisonment of a very small segment of bowel could be felt. The sensation to the finger was as if some one had taken a loop of intestine, and, pressing it against the internal ring, the

merest segment had stuck in the orifice of the ring, and that very little traction would pull it off. This, however, was a delusion, for a little traction demonstrated the adhesion very firm. I insinuated my finger in the ring, keeping the ball of the finger next the bowel, and, aiding this movement with gentle traction, relieved the constriction. Less than one inch of the small intestine was imprisoned just within the internal ring. The constricting ring had nearly cut through the several coats of the bowel on one side, the serous coat being entirely destroyed. The integrity of the knuckle of bowel was not much impaired.

The cavity was flushed with boiled water, a glass drain inserted and the wound closed. Pulse seemingly better than at the beginning of the operation. Vomiting continued on any attempt to take the slightest fluid for two days. Respiration, which had been very slow and sighing, showed little tendency to improve. Urination frequent and copious.

On the morning of the second day after operation, temperature 100° F., pulse 120; vomiting and restless; respiration labored and slow. Morning of the third day temperature had fallen to 96.5° F., pulse 128. Increased artificial heat and whiskey by rectum brought the temperature up to normal by noon. Passed gas by bowel; gave enema, which was followed by fecal movement. Drainage-tube removed same evening, as there was no secretion of any account. From this time on the patient made an uneventful recovery.

Case II.—Child, aged four years; seized with abdominal pain and evidence of pronounced shock. When first seen by myself a few hours afterward the temperature was 99° F. Calomel in one-eighth grain doses was given hourly until one and one-half grains were taken. This failing to act in ten hours, castor oil was given. This was followed by enemata in eight hours, none of which caused the slightest fecal action or the passage of gas.

During the twenty-four hours in which this treatment was being instituted the child never vomited nor strained at stool, and seemed to be much quieted by hot fomentations applied to the abdomen. The grave symptoms of increasing tympany and accelerating pulse were progressive. At the end of the third day the respiration was much embarrasssed by very marked tympanites, pulse 150.

Operation: median section. Greatly distended intestine rushed

through the incision. After a difficult search the hand ruptured a small fetid abscess in the left iliac space, which proved to have surrounded the necrotic bowel of a twist or volvulus of the descending colon just above the sigmoid. The little patient's condition was such at this stage of the operation as to warn a hasty cessation of manipulation or else a death upon the table. The badly damaged bowel was treated as best we could; the abdomen rapidly irrigated with hot water; iodoform gauze packed in around the abscess point, and closure of the abdomen. Death in two hours from shock.

Case III.—Young man, aged twenty-one, was seized with abdominal pain, greatest in the right iliac region. The family physician was called and prescribed an opiate. He was recalled the following day to find the patient much worse; vomiting and straining efforts at stool. Calomel was given, and later cathartic pills and Rochelle salts, all of which were vomited. Upon examination at the end of the second day the physician discovered a sausage-shaped mass in the right inguinal region. Hot applications, and morphia hypodermatically.

The patient, who lived a distance of twenty miles in the country, was first seen by me on the morning of the fourth day from the beginning of his trouble. At that time temperature was 102° F., pulse 138 and bad. Stercoraceous vomiting, cold clammy sweat. The physician had diagnosed intussusception. Operation was performed immediately under the most unfavorable surroundings, chief of which was a too-well ventilated room and that in bitter cold weather. Median section; general exudative peritonitis; tumor, specimen of which I show you here, was composed of an intussusception of eight inches of the ileum near the junction with the colon. The bowel was necrotic in some places and so firmly adherent as not to permit of its release.

The intussuscepted mass was resected and the bowel reunited by an end-to-end anastomosis, Czerny method; the abdomen irrigated and drained. Death in twenty-four hours from progressive sepsis the result of septic peritonitis existing prior to operation.

Case IV.—Lady, aged fifty-four, while walking home from the house of a friend was seized at 8 P. M. with severe pain in the abdomen, referred especially around the umbilicus. On reach-

ing her home the family physician, Dr. McDermott, was called. He gave a hypodermatic injection of morphia, and was recalled during the night to repeat the medicine. The following morning vomiting set in with little diminution of the pain. Morphia was again given, and hot applications made. Evening of same day I saw her in consultation. Vomiting had been much less during the day as a result of the morphia, and she had slept some. Temperature normal, pulse 84. She did not present the appearance of a seriously sick woman. Examination of the abdomen revealed nothing. Three drachms Rochelle salts given and retained. This was repeated during the night. The morning of the day several enemata of glycerin and warm water caused to be passed per rectum some fecal matter mixed with seeds of fruit and undigested food but no gas. Every four or five hours morphia had to be given for recurrence of the vomiting and pain, which were promptly relieved by it. At this time, third day from the inception of the trouble, morning temperature 99° F., pulse 88. Expression not so good as at my first visit the evening previous. When she did vomit it was green-tinged serum. I thought I could detect a small mass in the descending colon, and this with the good condition of the patient after three days of apparent obstruction, and the fact that waters of the enemata would often be stained, led me to believe the obstruction was probably fecal impaction. The evening of this the third day found no improvement, although, under the sedative action of a dose of morphia, several large doses of Rochelle salts had been retained. Pulse 100, temperature 100.5° F. Slight icteric tinge of the skin and looking haggard. She had no morphia since morning; was restless and vomiting green-tinged serum. Pain moderately severe; little abdominal tenderness or tympany. My opinion to the physician at this evening visit was that I could scarcely see any reason for abandoning my diagnosis of twelve hours before, namely, acute fecal impaction, but should the bowels not respond by the following morning, I would operate in order to be more fully master of the situation.

The following morning at nine o'clock I found that Dr. M. was compelled to resort to morphia during the night to control pain and vomiting; patient had slept six hours and looked much brighter; pulse 98, temperature 99.5° F. We personally gave her a large enema of glycerin, turpentine, and warm water, which

was returned very slightly colored but no gas. Tympany very slight; no marked abdominal tenderness.

My previous experience in intestinal obstruction if it had taught me one thing more than another, it was the value of early action, and I said to the doctor, "with your permission we will operate at once," in which proposition he immediately concurred. Operation at ten o'clock morning of the fourth day: median section. Over-distended and congested small intestine pushed through the wound upon opening the peritoneum. A little search revealed the pale, shrunken and empty small intestine beyond the obstruction. This was seized and traced to the point of the obstruction, which was one and one-half inches below, and one inch to the left of the umbilicus. The point of constriction was deeply placed to the left of the lumbar spine, but with retraction of the wound could be beautifully observed to be a segment of the small bowel two inches in length, apparently the jejunum, imprisoned in a mesenteric pocket which had been converted into a snare by the adhesion of two folds of the mesentery, producing a band-like constriction. After clamping one margin of the fold or band with forceps, the bowel was guarded with the finger and the constriction severed by a nip of the scissors. Other than a very sharp indentation and slight erosion of the serous coat, the bowel was uninjured. Peristalsis through the continuity of the constricted part was almost immediate, as the collapsed distal bowel commenced to vermiculate and fill up by the introduction of fecal matter. The band, which was nothing more than the falciform border of a fold in the mesentery, was ligated and cut off about one inch in length. I could not demonstrate by placing the finger in the bottom of the pocket that there was a condition of so-called rent or slit in the mesentery such as has been described by some writers.

This patient had never experienced any abdominal trouble in her life before, and was unusually healthy in every respect. The time of this operation was eight minutes. Bowels moved freely and voluntarily in seven hours. Patient made a rapid and uneventful recovery.

The two following cases belong almost in a class to themselves, and in a strict classification of acute intestinal obstruction would usually be omitted, but as they do not differ in any

essential respect except as following a surgical procedure they will be considered here.

CASE V.—Lady, aged thirty-four years; laparotomy for double pyosalpinx of long-standing. Many adhesions encountered; drainage-tube used; tube removed on the second day, patient doing perfectly well. Morning of the third day, temperature 99° F., pulse 80. The patient was a very self-willed woman of Swedish descent, and insisted that she could get up if we would let her. This last she did do at 2 P.M. on the same day during the momentary absence of the nurse, and walked across the room to a table on which sat a small pitcher of water, with which she proceeded to satisfy her unsatisfied thirst. She returned to bed, and was almost immediately seized with most agonizing pain in the abdomen. The nurse returning was shocked when told what she had done. I was called and responded in a short time; found pulse 100, temperature normal. Abdominal pain very intense and continuous, so much so that the patient would scream. She was given one-third grain of morphia hypodermatically which had little effect in quieting her. I remained with her for four hours, the pulse accelerating rapidly all the while; at 7 P.M. it was 120. Chloroform was given and the abdominal wound reopened. Several coils of intestine were found to be adherent in the left pelvic fossa. On gently separating and freeing these, a tightly constricted coil was felt between the margin of the left broad ligament, and a coil stretched across and adherent to the raw surface behind the uterus. The adhesions were separated, the abdomen irrigated and re-drained. There was no evidence of peritonitis at any point. The patient never rallied, death following in eight hours.

CASE VI.—Woman, aged twenty-five years. Operation at the Louisville City Hospital in November, 1893. Double pyosalpinx, with moderate adhesions; no drainage; recovery uneventful until the seventeenth day. During this woman's convalescence, she contracted the catheter habit, and being of a hysterical disposition the nurse found that the only way she could induce her to pass her urine without the instrument was to permit enough to accumulate to pinch her quite a little, when she would empty the bladder normally and completely. Upon the seventeenth day of an easy and afebrile convalescence she allowed her bladder to

become so distended that the nurse catheterized her. Soon after this, which was about 8 A.M., the patient was seized with such severe pain in her abdomen that the interne gave her one-fourth grain of morphia. I saw her about an hour later at my daily round, and she was still suffering most intense pain. The abdomen was flat, temperature normal, but the pulse accelerated above 100. Her expression was one of great and continuous pain. I ordered the morphia repeated and a large enema of glycerin given, with especial notice if any gas was passed. At 4 P.M. I was notified that the enema was ineffectual, no gas had passed, and that the pain was as great as ever. I ordered a high enema of turpentine and water. At 6 P.M. I found her with pulse 110, abdomen considerably distended, indeed I have never been able to account for such rapid tympany; neither gas nor fecal matter had passed and the pain was very great. She was ordered to be immediately prepared for a laparotomy.

In the presence of several members of the staff the abdomen was opened, and there immediately presented an obstructive point to the fecal circulation. To the right stump of the removed tube and ovary was adherent a point of omentum; this had formed a snare behind which a loop of the small intestine had fallen and become strangulated. The offending band was removed and the abdomen closed. The relief was so sudden and positive that the patient did not arouse from the anæsthetic and narcotic previously taken for eight hours. Her recovery was complete and uneventful.

The evacuation of the over-distended bladder allowing the intestines which had been pushed up to suddenly prolapse downward was seemingly the exciting factor in the production of an obstruction, the snare of which was prepared by the previously adherent omentum to the stump of the ablated right appendages.

Of these six operations, three patients recovered and three died. I think there will be no disagreement when we assume that all would have died without operative interference. The mortality of 50 per cent. is very great, and yet the few cases reported are in evidence to prove that the large death-rate from operation in acute intestinal obstruction does not come from the lack of adequate surgical methods to deal with every phase of the lesion encountered, but from the late time the relief is

applied. This does not apply to obstructions following abdominal section, for here the obstruction, as in Case V., comes up so soon after the primary operation that the shock incident to the secondary opening of the peritoneal sac is often more than the patient can endure. Other things being equal, the longer the time which has elapsed between the primary laparotomy and the secondary one for intestinal obstruction the more favorable the prognosis.

The cases reported are a little remarkable for the variety of causes of intestinal obstruction which they represent. It is the usual coincidence that when one has only a few such cases, they will come in a school and be nearly all of a kind as far as causation is concerned.

Of the cases reported I have to censure myself for the result in only one, that was the child with volvulus; I saw this case from the first. However, it presented many unusual features, and most deceptive in every character. Vomiting was absent throughout the case. The tender age of the patient, if mechanical obstruction existed, would most likely suggest intussusception, and no symptoms of this form of obstruction were present. I was too slow in making up my mind to operate, and when I did, it had best not have been done. But my hope for a possibly favorable issue was fostered by the remembrance of success in Case I., which seemed well-nigh hopeless.

Case IV. illustrates most strikingly how one may be deceived in mistaking a most violent and irremediable (by medical means) obstruction for a less dangerous constipation, especially when the condition is clouded by the use of opium. While I do not contend that we can dispense with opium in the treatment of these cases, certainly where obstruction is in the least suspected we should withhold its use until a diagnosis can be made. The middle line of reasoning must be adopted. We cannot always diagnose in ten hours, nor even in twenty, and it is one thing to talk of permitting a patient to writhe in agony for that period of time, and another to stand by and see it.

Certainly the practice of masking every abdominal condition characterized by pain with opium is far too prevalent, and its practice gains additional calamity as surgery advances in knowledge which offers relief of these very conditions concealed by the cloak of opium and ignorance.

Interesting as it would be to discuss the various causes and their relative frequency in the production of intestinal obstruction, also the early diagnosis of this condition, based upon its symptomatology, the limits of this paper will not embrace such an extensive subject. After all, the various causes of intestinal obstruction, with their especial or characteristic symptoms, are useful only to make up the complete knowledge of a subject, and upon which to study and base certain special technique during operations, should we encounter them as the cause of the obstruction.

The burning question now is to educate men to know that action to be successful must be quick; that timely aid depends upon the man who first sees the case; that when a physician from any reason suspects that a patient's bowels will not move he should drop everything else and centre all his time and attention upon that patient; he should not waste his gray matter by trying to determine if it be a probable intussusception, volvulus, band, diverticulum or what not. Leave that for the operation to determine; it is the most reliable way to find out.

The practical and cardinal points in avoiding a fatal delay and making an early diagnosis are to be found in: Sudden abdominal pain; a rapidly accelerating pulse; the vomiting of much more fluid in a given time than is taken by the mouth; the green-tinged character of this fluid; the anxious expression of countenance when no opium has been used; the fact that although the enemata be stained by colon contents there is no expulsive movement of the bowels and the passage of no gas.

These symptoms should cause a physician to suspect obstruction of the bowels, and when this suspicion takes possession of his mind a new obligation is assumed; it is his imperative

duty to at least prepare for an operation for himself, or by getting some one else in case he does not care to operate; he should never go home to see what to-morrow will bring forth. The pulse is the sole indicator of the acuity of cause and status of the patient in intestinal obstruction. If a patient is seen at 2 P.M. and the pulse is 88; again at 6 P.M. and the pulse is found to be 110, to prescribe for such a patient with the determination to operate the following day if he is no better, usually means that while the physician is taking his much needed rest that night the patient is passing forever beyond the realm of operative relief. The next morning the physician will probably be much surprised and chagrined to find the pulse 140 and the patient moribund.

DISCUSSION.

Dr. F. W. McRae, of Atlanta, Ga.—It seems to me that the cases reported and the subject are of very great importance to us inasmuch as most cases of intestinal obstruction die. I have operated on only two cases of acute intestinal obstruction. One was following a laparotomy, and this does not really come within the domain of the paper, yet at the same time it is one of great interest, and I shall briefly allude to it. I operated for appendicitis on a patient in the country, and on the eighth day thereafter the bowels became obstructed. The patient had colicky pains, and nothing had come from the bowels for at least three days. Hypodermatics of morphine were given until pain was controlled. After that I failed to get the bowels to move. The patient had been vomiting, and on the tenth day I operated. There was no evidence of peristalsis. I found several coils of intestine in the pelvis bound together, and one of the coils of intestine was bound firmly to the cæcum and a loop of the omentum, causing volvulus of the ascending colon and complete obstruction. I broke up the adhesions, gave the patient strychnine, Epsom salts, calomel, etc., and hypodermatics of elaterium; the bowels moved freely, and he recovered. The other case was one of diaphragmatic hernia, and the patient died.

Dr. Herbert M. Nash, of Norfolk, Va.—It seems to me the

object of the paper read by Dr. Cartledge is to contend for operation in any case of intestinal obstruction that does not yield to the ordinary methods of treatment within a reasonable time. I have had the fortune to meet with many cases of intestinal obstruction in the last eight or ten years, and I have never seen a case that did not yield to medicinal treatment without an operation. That may seem strange and may be unsurgical in a surgical association. On one occasion I was called in consultation with two physicians to see a case of obstruction. It was evidently impaction of the bowels. We could not localize the trouble at all. The man was brought from the country to the hospital for operation, and I was asked to see him. His pulse was 100, and temperature 99½°, abdomen doughy and distended, and I immediately advised that operative interference be postponed, and that he be put upon large doses of atropine, the twenty-fourth of a grain given hypodermatically, alternated with a suppository. The next morning there was softening in the abdomen. The other physicians still were inclined to operate, but I said that inasmuch as there was no vomiting, no evidences of strangulation, that it was better to continue this treatment for a time. Still greater abdominal softening showed itself, and I still counselled delay, when one of the gentlemen, who was a brilliant young fellow, demurred, saying the delay was risking too much. The next morning I learned that the bowels had moved freely during the night. I have seen this occur at least twenty times within the last ten years in cases of intestinal obstruction, and the cases have yielded to atropine given in physiological doses. If we have a case of fecal impaction, it almost invariably yields to this treatment. We should not neglect other medicinal means, as the administration of salines and high enemata. I have seen these cases relieved so frequently by this treatment that I have deemed it necessary to bring it to the attention of this Association.

I have recently seen a case of impaction of the colon in a man eighty-four years of age. He was taken sick on Thursday night, having eaten largely of grapes and swallowed the seeds. The next day when I saw him his abdomen was distended on the right side, and every effort was made to empty both the bowel and stomach. Friday afternoon, there being no progress made in the case, the man was put on atropine, which was continued until the next day, when he was fully under the effects of the

drug, and had every symptom of atropine poisoning. It was then stopped, high enemata given, and at eleven o'clock that night the bowels began to move. By the next morning the man had several copious movements which were full of grape-seeds. While I am in favor of operative interference, still I think every possible means should be employed to try to relieve the obstruction before resorting to operation even in the most skilful hands.

With regard to passing a long tube in these cases of obstruction, I do not think I have ever succeeded in going beyond the ileo-cæcal valve. It can be passed up two or three feet, not at first, but by dilating with water and then pushing with due care.

Dr. John D. S. Davis, of Birmingham, Ala.—While it is proper to advocate conservative means and medicinal treatment in relieving intestinal obstruction, yet when we have an acute intestinal obstruction nothing but surgical interference, as a rule, will do much good. Sometimes we may have impaction, and by the dilating effects of atropine and by water enemas we may get an action of the bowels, but that is obstruction from impaction. Where we have obstruction by volvulus or by adhesions, producing flexions, nothing but surgical interference will relieve the conditions.

With reference to what Dr. Nash has said about passing a tube up the rectum, it will usually go as far as the sigmoid flexure, but not further than that. The tube will usually double up after coming in contact with the promontory of the sacrum.

Dr. Nash.—I have passed a stiff tube up two and one-half feet in my own rectum for the relief of obstruction.

Dr. Davis.—If a stiff tube is used there is more or less danger attached to its introduction on account of the liability of perforating the bowel. It may be introduced beyond the sigmoid flexure, but it requires great care and skill.

As to throwing three quarts of water into the colon, without great care and some training of the bowel it should not generally be done. Lacerations of the peritoneal portion of the gut may result. If we have a case of impaction in the colon to deal with we can sometimes soften up the contents of the bowel and probably relieve the obstruction. There is danger of inducing traumatic peritonitis by using too large a quantity of water. As to the water going beyond the colon, if the ileo-cæcal valve is normal, it is impossible to throw water into the small bowel.

The treatment advocated by Dr. Cartledge is justifiable and should be resorted to.

There is one point I would call attention to, and that is, in the removal of pus tubes or whatever operation you may do in the pelvis or abdominal cavity, where you break up extensive adhesions, if possible cover the abrasion either by a fold of peritoneum or take a piece of omentum and cover it. The bowel coming in contact with the raw surface will adhere, and you may get flexion, impaction, and finally the death of the patient. In the absence of vomiting in these cases, with not a single symptom to guide the surgeon in his diagnosis, it is right for him to postpone operative interference; but where the symptoms point directly to acute obstruction operation should follow, for the essayist has wisely said that while the doctor is taking his much-needed rest at night the patient is passing the realm of operative relief into the world beyond.

Dr. Rufus B. Hall, of Cincinnati.—The Doctor has given us an excellent paper. As he remarked, the mortality is high, about 50 per cent.; but when we take into consideration the nature of the lesion, it is not so bad, for we save one-half where all would otherwise die. He intimated in his paper that if we made our operations earlier the results would be better, and I rise especially to emphasize as well as to indorse that remark.

With regard to belladonna and other medicinal agents in the treatment of intestinal obstruction: when the diagnosis is made it seems to me that this treatment should only be directed for the comfort of the patient for the time being; when the diagnosis is made operation is plainly indicated, and the sooner it is done the better. What we want in these cases is an early diagnosis, then the courage of the attending physician or the operator to make the operation. The operation should be performed as early as possible, while the patient yet has good strength, then he has a great many more chances to get well.

In reference to one remark made by the last speaker, it is all very nice to talk about covering pedicles with omentum, fixing them so that we will not have intestinal adhesions in the pelvis, but practically there is a vast difference. It is impossible to protect the pedicles in many cases in practical work as theory would have us to do it. I grant that there is a source of danger from that cause. I have lost patients after similar operations from

intestinal obstruction. I have thought that we might, in some of the very worst class of cases, do this—that is, where we have a large suppurating ovary filling the pelvis practically full, in which, after enucleation, we have nothing in the pelvis that resembles the normal peritoneum. Protecting the pedicles by covering them with peritoneum is impossible. In many of these cases we can guard against intestinal obstruction by packing the pelvis with gauze to prevent the normal intestine from coming in contact with the raw surface. I grant, however, that this procedure of packing the pelvis with gauze gives the patient an additional load to carry; but between two evils, we should choose the least, and pack with gauze. I think there is great merit in it in those cases where we have extensive raw surfaces. If we had a clean pelvic cavity, we would not think of packing the pelvis with gauze to prevent adhesions, but where we have an extensive raw surface it is to be favorably considered.

Dr. Richard Douglas, of Nashville, Tenn.—Dr. Cartledge has captivated us with his candor in reporting these cases. In reporting a series of cases with a mortality of 50 per cent., no matter what the pathology or indications may have been, it is something that men do not often do. A mortality of only 50 per cent. from acute intestinal obstruction is not at all bad. I think he should feel that he has been unusually successful.

The Doctor attempted to establish some facts for diagnosis which I appreciated. I recognize the force of his argument when he says that the pulse is practically the only reliable guide. I have seen patients with intestinal obstruction in which all the other symptoms were wanting except constipation and a gradual perceptible decline in the pulse. I have operated on four cases of intestinal obstruction, and they are the only ones in which I can speak of the pathology with any accuracy.

The first case was a young lady who three years previously had had typhoid fever. The patient was first seen by Dr. Swanay, of Gallatin, who said she had had symptoms of intestinal obstruction for six days. He made the diagnosis and ultimately sent for me. She was extremely ill, and, although an attempt was made to relieve her, it was thought she would die. When the abdomen was opened adhesions were found from the mesentery to the surface of the ileum. There was a stricture

of the bowel. The pulse, when the patient was submitted to operation, was 140. The relief was decided and positive. The woman practically slept twelve hours after the operation, and recovered.

Another case, almost identically the same as the one narrated, was sent to me by a physician in Middle Tennessee, Dr. Murrell, of Winchester. The history of this case was that the patient had previously had typhoid fever, the symptoms being practically the same as those noted in the preceding case. The intestinal obstruction lasted thirty-six hours, the diagnosis being made by Dr. Murrell. When I reached the house the patient was no better. The abdomen was opened, the obstruction relieved, and the patient recovered.

A third case Drs. Haggard and Cain saw with me. The bowels had not moved for several days. I saw the case with a physician, the patient's son, and a diagnosis of intestinal obstruction was made. I insisted on operation, but it was agreed that if the patient was not better by the next morning operative interference should be resorted to. The symptoms lasted about twenty-four hours, and when I saw him first the son was not impressed with the gravity of the case. He had been giving him one-eightieth of a grain of atropine hypodermatically and the sixth of a grain of morphine. The following morning he was thoroughly impressed with the seriousness of the case, and the patient was seen by Drs. Cain and Haggard and myself in consultation, and we all agreed upon the necessity of immediate operation. The patient was at this time declining rapidly. The man was submitted to operation, and we found the bowels distended and some fluid in the cavity. In the right side, after searching for some time for the obstruction, we found a hard cord a little to the right of the promontory of the sacrum which seemed to run transversely, drawing up a coil of intestine. I again found the point of adhesion exactly like the other case. Dr. Cain remarked that it was as hard as a leather string. It was about two inches in length. The cord was cut into, the gut sutured, the peritoneal cavity washed out, drainage established, and the man died. I cannot understand why he died, because in my two preceding cases, when I opened the cavity of the abdomen and the bowels presented, the first thing I did was to seize a coil of intestine, draw it down, and plunge my knife into

a lot of contents of gas and feces. I relieved the intestinal obstruction, but in this case the man never stopped vomiting, was not relieved, and died.

Dr. W. L. Robinson, of Danville, Va.—The paper is one of great interest to me, for the reason that I have had cases of intestinal obstruction of a similar character. In one of these cases the obstruction and volvulus followed a hysterectomy. The only indication I had in that case was the pulse and no gas passing. I was just passing the house, and dropped in to see how she was getting on. The pulse and non-passage of gas led me at once to reopen the abdomen and save my patient.

In another case the adhesions were very extensive and had existed for several days. I did a complete section, and the point I wish to make is this: After liberating the adhesions I used purgatives for days afterward. The patient got along nicely until the salts were stopped, when she again suffered from obstruction, but by violent purgation and the re-establishment of peristaltic action she was relieved entirely.

A third case was one of gunshot wound of the abdomen. The man got along very well until the third day, when I was inclined to reopen the abdomen, but was urged by other physicians not to do so. I do not lay any blame on them or on myself. The next morning I reopened, found the bowel very much distended, and there was obstruction in the Murphy button, the intestine being filled with feces. I first punctured the bowel thus reducing the distention. I was pleased to see in that case, considering the enormous injections that were used and the enormous distention with gas, with what firmness the button held with no leakage.

Dr. W. E. B. Davis, of Birmingham, Ala.—I regret that I did not hear all of the paper. The part I had the pleasure of listening to is excellent. Those who have reported cases have given the history of having found adhesions. I believe that there are but few cases of invagination of the bowel compared with what we have been taught in the old text-books. Abdominal surgery has thrown much light upon this subject. It is a very serious thing to have to reopen the abdomen during the first week after an abdominal section for obstruction, from the fact that the patient is in a very bad condition to stand a successful operation. Besides, it is a very difficult matter to say whether or not there

is obstruction, inasmuch as there is always more or less difficulty in getting the bowels to act properly soon after an abdominal operation. There is such shock to the sympathetic nerves that there is obstruction from this cause, and it is hard to know whether the obstruction is from mechanical causes or from peritonitis or paralysis. The ability to detect peristaltic movements of the intestines is a most valuable diagnostic point. In cases of paralysis of the bowels you may put your ear on the abdomen and not hear a sound. Not so with obstruction in the early stage. Of course, paralysis from shock and peritonitis may result from a neglected obstruction. In experimental work it is remarkable how many adhesions are observed in second operations, and how few animals have obstruction of the bowels from this source. It demonstrates that the intestines usually assume very nearly their normal position while the adhesions are forming.

Dr. Nash.—In my previous remarks I referred to acute intestinal obstruction. Of course, I did not take into consideration those cases where there is the existence of a tumor or chronic inflammation, where there was likely to be bands of adhesion calling for operative interference. But it is very singular that in fifteen years' practice I have seen only one case of intestinal obstruction that required surgical interference. All the other cases yielded to medicinal measures.

Dr. C. Kollock, of Cheraw, S. C.—One interesting fact in connection with intestinal obstruction is this, that sometimes you operate and cannot find the point of obstruction, but in tumbling the bowels about the obstruction gives way and the patient is relieved. I have seen two cases of that kind.

Dr. Cartledge (closing the discussion).—I desire first to thank the members of the Association for their liberal discussion of my paper, and I desire especially to thank Dr. Nash for his remarks, because I think they are entitled to a great deal of consideration. I want also to corroborate Dr. Nash's statements in regard to the efficacy of atropine in the relief of intestinal obstruction. He has wisely dealt with the subject. I have an associate in the practice of medicine who called my attention to this agent, and I have in numerous instances had the satisfaction of observing how wonderfully either atropine or belladonna relaxes the bowels in connection with other means, such as high and low ene-

mata, and oftentimes relieves the patient. But I would also like to say to the Doctor that, unfortunately, we differ from the standpoint of observation of these cases. If the class of cases reported in the paper are the class that he has reference to, I am sure no relief could be obtained from such measures. Fecal impactions and obstructions by enteroliths, foreign bodies, etc., can often be overcome by such medicinal means as I have had occasion to observe more than once.

HERNIA OF THE DIAPHRAGM, WITH REPORT OF A CASE.

By Floyd W. McRae, M.D.,
Atlanta, Ga.

I bring this subject up for your consideration, not alone because it offers an inviting field for experiment and investigation, but also because of a recent most interesting case where I was forced to meet the emergency without time for research into the literature of the subject; and, while I was not then sustained by a knowledge of the opinions of the leading authorities, I find from subsequent investigation that the course pursued was in accord with the recommendations of such eminent authorities as Laennec, Bowditch, Guthrie, and Marcy.

In Dr. Marcy's classical work on *Hernia*, page 214, I find the following quotation from a paper by Dr. Henry Bowditch, published in the *Buffalo Medical Journal* in 1853:

"Finally, as a last resource, might not an operation for cutting the strangulated ring be effected? It never has been done, though Laennec suggested it. Yet I see no good reason why it may not be possible to recognize by the physical signs the side on which the disease exists and the probable amount of the affection. Having learned these two points, and having tried other means for its relief without success, ought we not to undertake the more serious operation with the scalpel?"

Dr. Marcy says: "The difficulty appears to be, even in the chronic cases, the determination of the diagnosis, although in marked cases it would not seem to be difficult. This having been done, and the suffering such as to endanger life, I do not

question that it is the duty of the surgeon to make an exploratory incision, withdraw, if possible, the abdominal organs from the thoracic cavity, and if, as we have seen from the analysis of the recorded cases, it commonly happens that the opening in the diaphragm is near the ensiform cartilage, an effort should be made to effect its closure. I have failed to find record of an instance in which this has been attempted, but a number of the reported cases teach that this would have been effected had the attempt been made by a skilful surgeon."

The following history of the case prior to my connection with it Dr. H. W. Terrell has kindly furnished me, and I give it to you in his own words:

"December 5, 1893, Mr. J. W. entered my office stating he was cut, having walked to my office, a distance of about two hundred yards from where he received the wound. I thought the wounds were slight, and asked him to have a seat in a chair. The sitting posture being too painful, and being very weak, a more reclining position was necessary, though that was very painful. I had him stripped of his clothing to make my examination, and found the following three wounds:

"1. One knife stab on lower margin of scapula.

"2. One in back below scapula.

"3. One in left side four and one-half inches from axillary line between fifth and sixth ribs, three and one-half inches from left nipple obliquely, cut about one and one-quarter inches long.

"Wounds Nos. 1 and 2 were only superficial, consequently my attention was devoted to No. 3, or wound in side.

"Upon a closer examination by my brother, Dr. E. B. Terrell, and myself, we found, by inserting our finger, that the wound in the side had pierced through all the tissue and had entered the thoracic cavity.

"I thoroughly cleaned the wounds; the closest antiseptic precautions being observed throughout. Having stopped all hemorrhage, I then proceeded to close the wound. I passed my needle deep down, and brought all cut and wounded tissue in close apposition, four to six sutures being used. I also placed an antiseptic rubber drainage-tube in the lower portion of the wound. Mor-

phine hypodermatically was necessary to relieve pain; stimulants were also given on account of great exhaustion.

"His removal from my office to the house where he had engaged board was accomplished by a large rocking-chair carried by four to six stout men. This position—sitting—he kept for two weeks, being unable to lie down on account of pain in the side. Morphine was still used.

"On the night after he suffered a great deal; morphine necessary; temperature, 101° to 102°. No fever after this. No medicines were given after this but Epsom salts to move bowels.

"Dressed wounds December 7th; found them doing well; was thoroughly antiseptic. After this dressed them at intervals of every two, three, or four days, always finding them doing well. Patient's general condition was good, and remained good throughout. On December 17th he was permitted to go to his home, a distance of eight or nine miles. I visited him at his home December 20th and 24th. I found that he stood the ride very well, and caused him but little fatigue. At each visit I dressed the wounds, discharging him at last visit, December 24th. Nothing occurred during his stay in town to affect his condition whatsoever. The best hygienic surroundings possible were given him. Wounds healed nicely, with no suppuration. I never saw him professionally from the time he was dismissed until his last sickness; only met him on the street three times. Each time he complained of pain in the region of the wound. Supposing that to be pleuritic adhesions, I gave him that as my opinion, and told him I thought it would *pass off*.

"On August 4, 1894, I was sent for to see Mr. W. I was unable to go on account of sickness myself. August 6th I was again summoned to see him. To this call I responded. Found him suffering with great pain in the region of the wound, extending up the left side to the arm, persistent hiccough, and stercoraceous vomiting. To right of the wound there was an enlargement about the size of a small hen's egg. He being treated in this sickness by Drs. Fitts and Ellis, Dr. Ellis only being present, we waited for Dr. Fitts, who came in a few minutes, to have a consultation.

"Thinking possibly the enlargement just referred to contained pus, we inserted a hypodermatic needle to ascertain. We found none. After a thorough examination and consultation we decided

there was either a hernia or 'telescoping' of the bowels. His pain, of course, was very great, and morphine was necessary. As to the treatment previous to my visit (August 6th), Dr. Fitts administered such remedies as are usually suggested for 'colicky pains' in the bowels, from symptoms at that time of 'cramp colic.' Having taken it to be a case of colic, morphine was the chief remedy.

"Dr. McRae was decided on to do the laparotomy, so we wired him at once. He arrived that night (August 6th). The operation was performed next morning."

I first saw the case on the night of August 6th in consultation with Dr. Ellis. The patient was in a very serious condition; pulse, 150; temperature, 101°. On turning him over to make an examination he began the most peculiar and violent hiccough I have ever seen or heard, which lasted for several minutes, during which time his agony was intense. The tympanitic tumor bulging out between the sixth and seventh ribs, the obstruction of the bowels, together with the history of the case, made the diagnosis of diaphragmatic hernia quite easy. We determined on an operation at once. Drs. Terrell and Fitts were summoned. I operated early on the morning of August 7th, assisted by Drs. Fitts, Ellis, and Terrell. I made a longitudinal incision, beginning at the cartilage of the ninth rib and extending downward about five inches. The opening in the diaphragm was readily located, tightly grasping the gut, which I soon found was the colon completely strangulated. I enlarged the opening in the diaphragm sufficient to allow the introduction of two fingers, but was unable to reduce the hernia, so I enlarged it until I could insert my whole hand, and after carefully breaking up the adhesions, which everywhere bound the peritoneum and the pleura together, I finally succeeded in withdrawing from the thoracic cavity the entire stomach and greater omentum, about one foot of the small intestine, and the whole of the transverse and a part of the descending colon. All these structures were gangrenous, dissipating every possibility of a favorable result. The wound was rapidly closed, and the patient put to bed in almost as good condition as when he was put on the table.

During manipulation I grasped the apex of the heart with my

fingers, and immediately improvement in the pulse was noted by Dr. Ellis. This was repeated several times with the same effect.

The patient rallied after the operation, and asked me what the result would be, but on learning the utter hopelessness of his condition refused to speak again, and died about seven or eight hours afterward.

In this case strangulation had occurred five days prior to my seeing him. Had an early diagnosis been made I feel sure the strangulation could have been relieved and the patient's life prolonged. The opening in the diaphragm was accessible, and I believe it could have been closed with a fair chance of permanent recovery.

The case serves to emphasize the necessity for early operation in all cases of acute obstruction of the bowels.

DISCUSSION.

Dr. Francis L. Parker, of Charleston, S. C.—The case reminded me of one which I had the opportunity of observing at the post-mortem, in which the pyloric end of the stomach and greater portion of the transverse and a part of the descending colon were at the abdominal ring on the opposite side, the stomach resembling an elongated bag; it was a chronic case of some years' standing, and strangulation finally resulted, ending fatally. While the Doctor was reading his paper I was thinking whether a gradual stretching of the anatomical attachments of the parts implicated could take place in so short a time as would allow as much escape of the hernia as the Doctor described in this instance. Remembering this case I refer to, I was interested in that point. I suppose hernia had taken place more than five days before the time of operation, and, being limited at first, increased daily until strangulation resulted.

Dr. McRae.—I think the hernia became strangulated five days prior.

Dr. Parker.—There must have been more or less hernia immediately after the injury. It is surprising that the patient lived so long.

Dr. McRae.—That is a remarkable feature.

Dr. John A. Wyeth, of New York City.—These injuries to the diaphragm, followed by hernia, are exceedingly rare, as we

all know. It has been my good fortune, or rather misfortune, to meet with one case, and all the holes in the diaphragm I have seen were those I made myself in operations upon abscesses in the diaphragm and above the liver or spleen.

I think it would hold true of this form of hernia, as with all forms of hernia, to operate at once. Delay is dangerous in all forms, and especially in the form connected with the diaphragm. The indications are imperative, and as soon as you recognize the lesion you should move at once by abdominal incision and by traction, without enlarging the opening if you can, in order to reduce the strangulation. I have made it a rule in lesions which involve the alimentary canal to move on them at once. I think it is the rule in surgery of the viscera that operation should be performed at the first suggestion. The incision adds little to the danger, and the reduction of the hernia means safety. If it is left alone, it means death.

Dr. W. E. B. Davis, of Birmingham, Ala.—Our great difficulty is a failure to diagnosticate the condition early enough to operate with safety. We have this same difficulty to contend with in a great many abdominal troubles. It is hard to know what we have until we make an exploratory incision. The symptoms may simulate those from obstruction in other forms of strangulation, and I believe with Dr. Wyeth that we should operate at once when the symptoms warrant us in believing that we have strangulation of the bowel. We should make the incision and proceed as has been recommended. As I have stated, the great difficulty arises in not knowing what the condition is. In the majority of cases we cannot determine that it is a case of hernia of the diaphragm. We should, therefore, make an exploratory incision to determine what we have, and then relieve it.

Dr. McRae (closing the discussion).—The history of the case, the stab-wound, the trouble with the respiration, the marked tympany, the same as you get when the colon is distended with gas, the tympanites extending over a large area, the bulging out, all seemed to make the diagnosis clear in my case. I do not think, ordinarily, it is possible in the majority of cases to make a diagnosis of hernia of the diaphragm. A short time ago, in looking over reports of cases of hernia of the diaphragm, I found reports of several cases in the files of the London *Lancet*. In most of them the condition had been determined post mortem.

GUNSHOT-WOUND OF THE SPLEEN AND KIDNEY; ABDOMINAL SECTION; HEMOSTASIS BY DEEP SUTURE; RECOVERY.

By Louis McLane Tiffany, M.D.,
Baltimore.

Gunshot-wound of the spleen, recognized, treated, and cured, is believed to be of sufficient rarity to justify placing the following case on record:

The patient was a male negro, twenty years of age. Two hours previous to entering the University Hospital, March 21, 1894, he had been shot with a small-calibre rifle from a distance of twenty feet, the weapon being directly behind him and he being erect. His urine was slightly albuminous; the pulse, temperature, and respiration normal. There was a bullet-wound three inches to the left of the spine just below the last rib, from which blood oozed. Dr. Spruill, Resident Physician, after proper cleansing enlarged the wound, found that the kidney had been injured and that the bullet had passed onward, presumptively into the peritoneal cavity; he filled the wound lightly with gauze and notified me. I saw the patient three hours later, about five hours after the shooting. The only change that had taken place since entry into the hospital was an increase of five per minute in the number of respirations; the pulse and temperature were not changed, and there was no appearance of shock and no pain. External examination of the abdomen by touch and palpation revealed nothing, not even painfulness. Dr. C. W. Mitchell, one of my colleagues, thought that the respiratory movement was rather less marked over the left than the right side of the abdomen. I could not detect the difference however.

The patient was anæsthetized, laid on the belly, and the wound,

after being enlarged, was examined. The upper portion of the left kidney was perforated, and dark blood flowed from the peritoneal cavity beyond. This large wound was filled with gauze, the patient turned on the back, and the abdomen freely opened along the left semilunar line. A moderate amount of blood was free in the peritoneal cavity; no wound of the intestine could be discovered, but the spleen was found perforated, blood flowing freely from the wound of entrance, as well as from the wound of exit; the latter wound, in the concavity of the organ, was slightly the larger of the two.

The perforation through the spleen was about three inches from the free lower border. Unwilling to subject the patient to splenectomy, I attempted to arrest the bleeding in the following manner: A long needle threaded with silk was passed entirely through the spleen central to and parallel with the bullet-track; the long ligature was then tied over the free border of the organ so as to press the surfaces of the wound together tightly enough to arrest bleeding, yet not to tear through the splenic tissue; the ends of the ligature were cut short, the peritoneal cavity cleaned by copious irrigation with hot water, and the abdominal wound closed. The kidney was tamponed with gauze through the dorsal wound. Convalescence was uneventful; the anterior wound healed by primary union; urine flowed from the dorsal wound for two days only, union by granulation taking place. The patient left the hospital well, April 22d.

The literature treating of spleen wounds is meagre. Probably about all that is known will be found in the *Medical and Surgical History of the War of the Rebellion*, Part II., Surgical Vol., p. 149 *et seq.*, and it is not necessary to recapitulate here the information there set down.

Symptoms and treatment deserve mention. The wound being small, hemorrhage was not profuse, and no abdominal organ save the spleen was wounded. I could not recognize any evidence of spleen wound without inspection; pressure, handling, percussion, revealed nothing, the belly remaining soft and flaccid. Twice I have opened the abdomen for gunshot-injury, finding wounded intestines; both cases had the belly-walls much more rigid than had the subject of this re-

port. The lumbar incision showed me dark blood flowing from within the peritoneal cavity, and for this reason the abdominal section was performed, and not because of information elicited by handling.

Treatment of a wounded spleen by cœliotomy places that organ in the category with other peritoneally covered organs, and calls for no comment; but the mode adopted for the arrest of hemorrhage is noteworthy. The classic treatment for a perforating wound of the spleen is splenectomy, because it has been held that bleeding is not otherwise to be stopped; this we now know is not so, but that it is possible by ligature to induce hæmostasis. In case the wound is larger than in the instance here reported, it would be necessary to interfere without delay and pass several sutures in the manner stated, so as to make pressure over a larger area. When rupture of the spleen has occurred this method of hæmostasis seems especially indicated, for thereby support to the injured viscus would be afforded.

DISCUSSION.

Dr. W. E. B. Davis, of Birmingham, Ala.—The paper to which we have just listened is an interesting one from the fact that it brings up a subject that we seldom discuss. We rarely see any literature with reference to wounds of the spleen, and the method the Doctor has suggested of controlling hemorrhage from small injuries is a good one. While successful in controlling hemorrhage from a small wound of the spleen, I doubt very much whether it can be depended upon to do so in a large wound. I would rather risk the removal of the spleen in such a case. The operation is a simple one, not hard to perform, and the patient will get along all right without a spleen. Dogs fatten without it. The method of Dr. Tiffany is new, so far as the literature of the subject is concerned, and it certainly can do no harm to put in stitches and see whether they control the hemorrhage or not, before removing the spleen.

Dr. Joseph Price, of Philadelphia.—A point of interest in connection with this subject is that of determining the source of hemorrhage and the presence of injuries. Too many of these

sufferers have been permitted to die that could have been saved by timely, judicious operative interference. A case has been reported where a man in travelling through the West had been kicked by a horse. He lived twenty-four hours after the injury, when his liver was found to have been injured and his abdomen full of blood. A few days ago a man entered the German Hospital of our city with a shot-wound, and with precisely the same absence of symptoms of hemorrhage and injury. Surgeons of rare skill and judgment permitted the man to lie there without determining the extent of the internal injury. In this case an incision should have been made in order to find out the extent of the injury, and if possible to repair it. Surely, no surgeon in this country would excuse himself if he made a two-inch incision into an abdomen and the patient died from the incision. Ten minutes of anæsthesia from ether or chloroform will not kill, and a small two-inch incision will never kill. As I have previously said, too many of these patients have been permitted to die. We simply owe Dr. Tiffany a vote of thanks for presenting a case of this character, free from symptoms, so beautifully demonstrating what surgery ought to accomplish in about all similar cases. Too many patients are dying without efforts being made on the part of surgeons to save them.

We remember years ago, when the subject was discussed by New York surgeons, one published the non-operative cases, and another the operative cases. We might say in reply to such discussions that they teach us valuable lessons. Let us briefly review the results of the operative cases. For instance, years ago in one of the Southern States a surgeon, away back in the forties, resected a large bowel, used Sims's silver-wire sutures, splints, and approximated the injured bowel. The surgery was unique, it was good, and he saved his patient. At Danville, Va., Robinson did precisely the same thing in a man wounded with a tobacco-knife, carefully suturing the large bowel and saving his patient. At Asheville, at the Vanderbilt Home, a man received a gunshot-wound with five perforations, was carried into a box-car, and these perforations closed, followed by recovery. In Lexington, Ky., six similar cases of gunshot-wounds have been reported by David Barrow; five of them recovered. I think I could report, if time permitted, some twenty cases occurring in the Southern

States, nineteen out of twenty recovering, settling the operative side of the question. I know perfectly well that in the large educational centres—Philadelphia, New York, and Baltimore—many of the cases are permitted to die with turpentine stupes and poultices covering their stab- and shot-wounds. It is said that Col. Goodloe's case was a non-operative one. Not so. The surgeons refused primarily to determine the character of the injury, but twenty-four hours later, when vomiting of blood and the contents of the stomach occurred, with symptoms of peritonitis and hemorrhage great, they decided to determine the character of the injury. Surely that case comes under the head of non-operative cases.

I must differ with my friend Dr. Davis as to the removal of the spleen. Even in ragged wounds of the spleen, the method directed here, or that of a gauze compress and tampon anchored by catgut sutures, would be a far safer method than that of extirpation of the spleen. For instance, take a flat series of compress gauze, six or eight thicknesses, and anchor it firmly by catgut sutures, which will absorb in twenty-four or thirty-six hours, liberating your gauze compress and drain; you can then have control of all hemorrhage. The spleen is a leaking organ. It is not like the hemorrhage we get from wounded arteries. Precisely the same would hold good in dorsal drainage in compresses applied to the kidney. In my brother's case of shot-wound of the kidney, the wound passing through the entire length of the liver into the dorsal muscles, he placed a gauze drain in the liver wound clear through his dorsal wound and removed the kidney, as the large vessels of the hilus of the kidney were wounded. He saved his patient. He withdrew his gauze drain from the dorsal wound. In this connection I desire to say that I once asked our distinguished friend, Dr. McGuire, what class of patients recovered from gunshot-wounds, and he distinctly said that all cases that recovered during the late war were those with dorsal drainage. This strengthened my position as to the importance and value of drainage, and it enters largely into my present position in reference to drainage.

Dr. John A. Wyeth, of New York City.—There was one point in the discussion of this case that so far seems to have escaped attention, and it is one, I think, it is well in general not

to overlook entirely. It is not accorded the value that it deserves. I refer to the ligation of the extremity in these cases of sudden internal hemorrhage. I think many cases can be saved from internal hemorrhage with this method that would otherwise be lost. I have resorted to it in a number of cases, and I have been gratified with the results. Deligation must be sufficient to hold the veins from the return current and not to compress the artery.

Dr. Francis S. Parker, of Charleston, S. C.—I have listened with great interest to the case which Dr. Tiffany has just presented, and I think it is instructive to all of us, particularly as the treatment shows that hemorrhage of the spleen can be controlled in the simple way adopted by him with a successful result. I think, too, that there is not one of us who has not been taught, particularly the older gentlemen present, that any injury of the spleen would cause a fatal hemorrhage, and very promptly. I know I was brought up in that school, and I remember distinctly when a student hearing Prof. Geddings lecture upon that subject, and I remember, furthermore, that Prof. Miles, of Baltimore, in his lectures on anatomy, took very much the same ground.

I notice, also, Dr. Davis referred just now to the vascularity of the spleen; and that, if it was injured, there was almost sure to follow a profuse hemorrhage. As Dr. Tiffany was reading his paper it interested me very much, because at the battle of Lookout Mountain, or Raccoon Mountain, a soldier was struck over the region of the spleen by a fragment of a shell, and he fell (it was a night fight). The man subsequently recovered consciousness. I do not remember whether he walked back or was carried on a stretcher or in an ambulance to the hospital, not less than four miles from the place where he was injured. It was said he was struck by a spent fragment of a shell. We arrived at the hospital at about daylight. The man was reclining or resting himself in one of the tents, when Surgeon Bellenger's attention was called to him. About twelve o'clock he died; that is to say, the surgeon after having attended to others, went to look after him and found him dead. Exactly the time he did die none of us know. He might have died an hour after daylight. We reached the hospital shortly after that time, the fighting occurring about ten o'clock at night. Under the circumstances we

were puzzled to know what had killed him. We examined him carefully, and with the exception of a slight bluish mark, not larger than the size of a dollar, over the region of the spleen, we found nothing which had the appearance of any injury. At the post-mortem examination, in examining the side upon which the man was said to have been struck, we noticed an ecchymosed spot so slight that unless we had been looking for it we would have passed it by. Upon opening the abdomen and examining that region I found a stellate fracture of the spleen. I am sure there were four distinct lacerated radiations from the central point, where there was destruction of tissue about the size of a nickel. In addition to that there were two or three other slighter lacerated radiations. By means of the probe we found that the depth of the larger lacerations were over one-fourth of an inch deep. There was not a sign of hemorrhage in the abdominal cavity. I then looked carefully to see whether the peritoneal and fibrous coats of the spleen had been lacerated to the extent I have spoken of. Both coats were torn through. I never was more astounded in my life. If I had been told that the man's spleen had ruptured before opening the abdomen, I would have expected to find a pint and a half or more of blood in the abdominal cavity, and he ought to have died from hemorrhage on the spot; and there are few gentlemen present who will not sustain me in that position. It is remarkable in this case that the man suffered so little from shock at the time. As well as I remember, he fell, and on regaining consciousness said he was struck by a spent ball, but he was able to get up after a little while, and walked or was carried from one side of Lookout Mountain to the other. The battle took place at Raccoon Mountain.

This case of Dr. Tiffany's is unique. I recollect looking up, after the publication of the surgical history of the war, to see what injuries of the spleen were recorded. I do not remember any of this kind, and I refreshed my memory just now by asking him what was said of the injuries of the spleen in that publication, because I was not quite sure that I recollected correctly. He tells me that there is only one case mentioned in which the spleen was exposed by a severe abdominal wound, but that there is nothing said of fracture of the spleen such as I relate. I think hat the idea of the spleen being wounded and always followed

by fatal hemorrhage must not be put down as an inevitable surgical fact. After having heard Dr. Tiffany's interesting case and having seen the one that I here report, I am confirmed in the view that serious or fatal hemorrhage does not always follow from an injured spleen.

Dr. Tiffany (closing the discussion).—I briefly allude to two points: First, the amount of hemorrhage that will take place after injury of the spleen. There are quite a number of cases of ruptured spleen recorded in which the patient had died from intra-abdominal hemorrhage, but not within a few hours. The patient dies the following day or morning. The spleen must be quite torn in two before the patient dies rapidly. I think this is the experience of those who have opened the belly for injury of abdominal organs, especially a gunshot-wound of the mesentery. A gunshot-wound of the mesentery, when the belly is first opened, is recognized by a certain amount of bleeding, and then as the peritoneal cavity and the surface of the mesentery are cleaned, the oozing vessels become spurting vessels. I have never seen a wounded mesenteric vessel that spurted when I opened the belly, and I have never found one that did not spurt when I cleaned out the belly. Intra-peritoneal hemorrhage before the belly is opened is slow. What Dr. Price has said is accurate. I think there is oozing, and the spurting comes when the intra-abdominal pressure is removed—the pressure of the abdominal muscles and of the diaphragm. Oozing will go on slowly in a fatal splenic rupture.

TREATMENT OF NÆVUS BY GALVANO-PUNCTURE.

By William Perrin Nicolson, M.D.,
Atlanta, Ga.

Large nævi furnish some of the most embarrassing questions that arise in surgical practice, and in the handling of them there are many difficult problems to solve. This is notably true when they occur upon the face, especially in girls, as the resulting deformity following operation is in many instances somewhat comparable to the original lesion. Hence it behooves the operator to endeavor to select that measure that will result in the removal of the trouble with as little subsequent deformity as possible.

It is not my purpose to rehearse the many operations designed for the cure of nævi, but more to call attention to a line of treatment that has apparently not received the attention that it deserves. I refer to galvano-puncture. While this is alluded to by many authors as one of the means to the end, it is described by few, leaving the impression that its practical use has been confined to a small number of operators; and among those who have given attention to this method of treatment there seems to be a very confusing variety in the conclusions reached, as to the methods of applying the electricity, the current to be used, and many other details that seem important.

As it has been my fortune, in a single case, to exhaust many experiments in reaching the final cure, I thought that my experience might be of service in clearing up some of the mooted points at issue. This case is reported, not as a

piece of brilliant work, but rather as the result gropingly reached, after much labor and perseverance.

CASE.—Mabel Y., female, aged eighteen months, was brought to me in the autumn of 1892, by Dr. Gay, of Turin, Ga., with the following history: Soon after birth a red discoloration was noted just below the left ear, and this began to extend gradually in area. After some time it had spread upon the face and upward upon the ear, and at the same time rising above the surface of the skin. Its growth had been continuous, until at this time it filled the entire post-maxillary groove, extending up upon the back and front of the ear, and afterward upon the face for some distance. It also projected outward about an inch from the lowest point of the depth of the groove behind the jaw. The indications for operation at this time seemed so discouraging that I advised waiting, in order to observe what course it was pursuing.

In January, 1893, about two months afterward, the patient was again brought to me on account of the apparently impending rupture of the tumor. It pulsated freely, and immediate operation was advised. I could not see how the mass could well be ligated, and in a child of this age the attempt to dissect out the growth promised to result in dangerous hemorrhage. In the interval between the time of seeing this case, on account of some experience which I had had in the removal of growths from the skin by electricity, I had been looking into the matter of galvano-puncture, only to find but little encouragement and very little in the way of details in regard to the methods of procedure.

On January 25, 1893, assisted by Drs. L. B. Grandy and M. B. Hutchins, the little child was anæsthetized with chloroform, and an insulated needle, attached to the positive pole of six cells of a zinc-carbon battery, thrust into the most prominent part of the tumor. The sponge electrode of the negative pole, moistened with a salt solution, was applied to the face near the growth. The *séance* lasted about twenty minutes, and, though several punctures were made into the vascular tissue, but little bleeding occurred. There appeared to be a considerable condensation of the tumor at the conclusion of the operation, which continued through the next day, when the patient was taken to her home in the country. At the end of two weeks I saw the patient

again, when this hardness had disappeared, though the tumor had not increased any in size, and was considered by the parents somewhat smaller. At this time I made a second operation of similar nature, the needle being inserted into the portions not previously attacked.

The result in this case being practically negative, to avoid a tedious history I would say that during the succeeding twelve months I made as many different attacks upon this growth, changing at times the strength of the current, the needle used, and the methods of applying the same, until at last in the spring of 1894, as the result of this somewhat persistent work, the patient was completely cured and the growth entirely disappeared. It sounds like a somewhat extravagant statement when we say that this patient was placed under an anæsthetic as many as fourteen times.

In presenting for your consideration this case, I am led to describe my slow attainment of the result, in order that we may draw some lessons from the different means employed during this long treatment. In a future case I am sure that a far more speedy and satisfactory result could be attained, as the result of my many trials and failures in this one. The conclusions which I have reached may be formulated as follows:

1. *As to the applicability of the operation.* While I do not claim that this should supersede all the various methods employed for ligating the nævi, I am convinced that there are many cases where so much injury results from the cicatrices following these ligations, that it is far more desirable if we can attain the end without such destruction of tissue, even though it requires a much longer course of treatment. Again, in some instances the position of nævi, as in this case, is such that the application of a ligature to its deepest portion is practically impossible. In such cases I am sure that we would be justified in at least making an attempt by this method before resorting to graver procedures.

2. *The quality and quantity of current.* In all that I can find upon the subject there is a wide difference of opinion,

especially as to the current to be applied; some urging positive, while others claim that the negative is more efficacious. As it was my privilege to make use of both at different times, I am disposed to attribute all the good that I obtained from the use of the positive pole. We know that this is the coagulating side of the battery, while the negative is destructive, and hence, theoretically, the positive should be employed. I am sure that this is correct. The danger of sloughing is also much less under the use of the positive current. In reference to the quantity to be used, there is also a very wide margin. One author advises six cells, and another thirty-six. I regret that on account of the use of a portable battery I did not measure the amount used in this case, though I doubt the necessity of such a step, as the surgeon will naturally attempt to use what seems to produce the necessary changes in the tissues.

The battery used by me was a zinc-carbon Mackintosh battery. I began with six cells, gradually increasing the dose to twelve. This current, when the sponge electrode is moistened with a salt solution, will produce violent contractions of the facial muscles, even when the patient is profoundly under the use of chloroform, and knowing the amount of disturbance which occurs in a conscious patient from the use of even as small a number as six cells in removing growths about the face and mouth, I do not believe that it would be within the bounds of safety to increase the current above twelve cells.

3. *The method of applying the electricity.* Here, again, operators seem to have reached very different conclusions, and especially in reference to attaching the needle to one pole alone, or the introduction of one needle attached to each pole. Several insist that a true electrolysis should be brought about by two needles, while others claim that the positive needle should alone be introduced, and the sponge electrode applied at some indifferent point. Believing that the true electrolysis is not desirable, I have followed the latter method, applying the sponge to the cheek or upon the neck.

As to the needles required, though one that is insulated from a short distance above the point may be desirable, on

account of preventing a slight eschar of the skin at the point of puncture, I do not believe that anything will be found more effective than the common steel needle; those both gold-plated and of platinum will become blackened in a few moments, and give no better results than those of steel, which can easily be renewed at each sitting.

4. *Method of attacking a tumor.* Having in this case a large tumor, I enjoyed the opportunity of attacking it from a great many points. My first efforts were directed to punctures at the most prominent points, but it did not seem that a permanent effect resulted from these operations. Later, punctures along the periphery radiating toward the centre were systematically made, and from this point I believe the success of the work became apparent.

I am especially convinced that the point of the periphery, from which the leading blood-supply seems to be furnished should be especially attacked. The length of each sitting should be governed by circumstances, but I had been unwilling to prolong them beyond twenty minutes on account of possible general disturbance from the current. The intervals between operations are, of course, subject to many contingencies, but I am fully convinced that the fault should not be in too frequent operations. From two to four weeks I should consider a fair interval of repose.

5. *The method of cure.* Most authors attribute the success in curing nævi by this method solely to the formation of a coagulum, and while I do not doubt that in many small tumors this may be the leading factor, in those of such vascular nature as that under consideration I do not believe the coagulum would hold. Two other elements, I am sure, have a large share in the subsequent changes that take place. After withdrawing the needles an eschar will be found at the point of entrance, and during the passage of the current a few frothy bubbles issue beside the needle. Cannot the resultant contractions along the eschar in the tumor attack and close some of the bloodvessels? This is, in my opinion, a leading element in reducing the supply of nutrition. Again, the vasomotor

nerves have a share in the result. It will be necessary at times during the flow of a good, strong current that the contraction of the vessels will blanch and almost empty the growth, only to let it return as soon as the current is broken. This is positive evidence that the temporary stimulation of the muscular coat of the vessels can cut off to a large extent the supply of blood to the part. Another fact that impresses me with the belief that these two elements have a larger share in the result than a coagulum is that, in the history of this case, in one of the longer intervals it was noticed that the shrinking of the tumor seemed progressive. Upon this fact it was concluded to await the results, and without any further change in the consistency of the growth it was gradually absorbed, until finally the level of the normal skin was reached over the whole field occupied by the growth.

In conclusion, I have only to say that I believe in the application of this treatment to those ugly nævi of this class we have a powerful means to an end, which leaves the patient with less to show for the operative work than any other procedure with which I am acquainted, and I feel that a more extended trial will reduce the time in which these tumors can be cured to a very much shorter, and less annoying, period than that required in my experience.

DISCUSSION.

Dr. F. W. McRae, of Atlanta, Ga.—Mr. President: I wish to mention one case which was interesting to me. It was a case of Dr. Hutchin's, of Atlanta, of immense port-wine birthmark. It was an ugly thing, which was confined to the space of a silver half-dollar on the cheek. By the simple introduction of a fine needle within the enlarged vessels of the growth, and the application of the current—I do not remember the strength—all of the vessels were destroyed, and now there is simply a white spot. It is not a disfiguration at all, and the result is excellent.

Dr. John D. S. Davis, of Birmingham, Ala.—This is too valuable a paper to pass without free discussion, yet I do not

feel like discussing it, as I have had so little experience in the use of electricity in this way. One of the reasons for the use of it as indicated by the paper is for cosmetic purposes. I have a case now on hand, a large nævus located upon the eyelid of a little patient, and I expect to try the remedy recommended by the essayist. The greatest recommendation of electricity for nævus on the face is that you can remove the growth without very great resulting scar. If for no other purpose than for its cosmetic effect, we should recommend it as a valuable remedy in these cases.

OPERATION FOR COMPLETE PERINEAL LACERATION.

By Joseph Price, M.D.,
Philadelphia.

It is the general opinion of practitioners of medicine that specialists of the present period pay little or no attention to the diseases of women outside the abdomen and pelvis. This, I believe, is erroneous, except so far as the mushroom specialist is concerned. There are many men who, essaying to be authorities on the surgical diseases of the major order, have no conception whatever of injuries of the perineum and cervix so far as their intelligent repair is concerned. Indeed, there are many men with a large obstetrical practice who labor under the delusion that they have never ruptured a perineum, and that all their patients have entirely normal perinea.

This misconception is due to improper teaching more than to any other cause. When we consider that many of the prominent teachers of obstetrics do not hesitate to maintain that with this or that manipulation a perineum need never be ruptured, leaving out of sight altogether the fact that no procedure affords absolute security against rupture, there is no surprise that errors of belief are so common and pernicious. Perineal lacerations, unless extending through the skin to or through the sphincter, may escape detection unless by thorough digital examination. It is a serious error to start with the idea that a perineal tear does not exist unless that external part be lacerated to which the name "perineum" is commonly applied. We are directed in obstetrical directions to support the perineum with the hand, or with a towel applied so as to

prevent a tear, while the truth of the matter is that tears that do the most injury often have occurred before there is any indication for support of the skin or external covering of the perineum. It must be remembered that the perineum proper is made up of all the muscles composing the lower *pelvic diaphragm*, and that this pelvic diaphragm is anatomically the adjunct and *coefficient* of the upper or true diaphragm of the respiratory apparatus. This fact is of importance in estimating the importance and significance of pelvic lacerations. The simple suggestion of this fact will be sufficient to indicate another often forgotten phase of the logic by which the repair of these lacerations is to be insisted upon. As a primary and fundamental feature for the due appreciation of every perineal tear, it is to be remembered that it begins on the inside, or, in other words, proceeds from above downward, from within outward, or, in other words, it happens only as an accident of extreme rarity that there is any important outside tear without a coexisting internal tear. *And beside this fact another one is to be placed*—that there may be most serious internal laceration without any external manifestation so far as the skin is concerned.

Then, again, there may be so much over-distention of the tissues that all pelvic support is absent without any evidence of real laceration. This sort of a tear bears the same relation to evident laceration as does a free open incision of a muscle to a subcutaneous tenotomy. One is a much more apparent operation than the other, but the latter is none *the less real than the former*. So it is in pelvic tear; and over-distention may just as much claim surgical repair, and deserve the categorical term of laceration, as other injuries in which to deny the necessity of surgical interference would be considered a most serious error of judgment. Complete perineal laceration is a term usually applied to tears through the sphincter. These tears are regarded as the most important, as much, perhaps more, on account of the discomfort they entail from a cosmetic point of view. Women with the sphincter ani lacerated entail a miserable existence, though apart from this the

other complications and real calamities of pelvic laceration are often absent. The sphincter may be torn through, and still there may be no sagging of the pelvic contents, no cystocele, and no rectocele, no prolapsus uteri. This fact is explainable, if we remember that in a distinctly central tear the *lateral attachments of the muscles and fascia are uninjured*, while the middle junction of the perineal muscles is simply split, divided, or separated, and consequently the support, while diminished, is sufficient to withstand the pressure-force of the pelvic contents. In other words, the resistance of the muscles is diminished, not destroyed. Complete tears, in my opinion, ought to be considered as including all deep fascial and muscle lacerations, either on one or both sides, with a coexisting or non-coexisting sphincter tear, as the case may be. All of these tears deserve careful attention, with immediate operation, if possible.

All these tears should be approached as distinct surgical lesions, to be repaired in the line of their anatomical destruction, and not as cosmetic operations whose object is to obtain superficial appearances without regard to perfection and utility. Heaping up of tissue outside the lines of resistance and tension or mere thickening of the mucous membrane and skin does not make a true perineum, neither does a set of outside sutures, however much they may draw the parts together, afford any anatomical counterpart of a perineum. From this basis all the so-called outside flap-splitting operations for perineal tears are only puckering operations, bringing parts within the sutures that have never been *severed*, and in many cases taking them out of their proper relations. The instruments formerly suggested as the wherewithal for perineal repair, of which the Peaslee or Baker Brown needle may be taken as the type, should be relegated to *sailmakers* and *cobblers*. They have no place in the real delicate scientific surgery of the parts. Big sutures, heavy ligatures, clumsy instruments, have no more place here than in other surgery.

The ordinary short, strong sewing-needle fills the bill exactly in most cases, though the Emmet strong, fine, short

needle for general use is preferable. Silkworm-gut or silver wire are the preferable sutures. These, with a needle-holder without lock, and shot-compressor and tenaculum, are really the only instruments required. It is here, as in other operations, once understood they are simplified, and the simpler they are the more easy their performance and the more assured their success and utility, so long as their scientific conception is correct.

The Emmet operation, as originally suggested and afterward modified by its distinguished deviser, is the foundation for all successful operations on the lacerated perineum, either with or without *sphincter tear.* This, it is to be remembered, is always an inside operation. Even in sphincter tears, two or three outside stitches are all that in a majority of cases are necessary. Its so-called modifications are extensions only of the original idea of Emmet, and are only original in the use of a greater denudation, with a consequent increase in the number of stitches.

The ordinary Emmet operation for restoration of the pelvic floor has so frequently been described and discussed that I shall leave it for your discussion to bring out any misconception or question of the same, paying attention now to the method of closing complete tears, that is, those through the sphincter. In this condition of affairs, as in tears of less extent, the *flap-splitting operations* have claimed superiority in *certain quarters.*

I think I may safely say, however, that this is true nowhere where the scientific Emmet operation is really appreciated. Flap-splitting operations are really *misleading superficial procedures.* They attack tissues not in the lines of their real rupture, and do not and cannot go to the real origin of the tears. They do not afford an *end-to-end adaptation* of the torn muscle, but substitute for this a lateral apposition, simulating *end-to-end restoration* that I can readily demonstrate.

The loss of tissue objected to in the Emmet operation is more than equalled by the lateral apposition. Moreover, it is to be remembered that the sphincter is a distinct anatomical

unit, and that any flap-splitting that attempts to repair this together with other laceration is over-reaching itself and attempting too much in its efforts at one time to repair distinct lesions. When the fascia is injured in addition to the sphincter tear the injury is to be remedied by the ordinary Emmet operation. This operation, by its denudation, brings into relation large triangular bevels on one or both sides, putting into relation the torn ends of the torn muscles. When the sphincter ani is ruptured it must be remembered that its torn ends are drawn outward and backward until they lie on a line with the posterior line of the rectum. In other words, the muscle is strengthened. The depressions on either side of the anus are caused by the torn ends of the muscle retracting the mucous membrane, thus forming the characteristic dimples.

The denudation should be made so as to expose the cut ends of the muscle on either side, and continued upward into the bowel as far as the laceration extends, between the rectum and vagina, into the recto-vaginal tissue.

Two sets of sutures are to be used ordinarily. The first is the deep-set vaginal, and restores the recto-vaginal septum, bringing the parts into the relation they would assume were there no sphincter tear, while the other sutures are introduced as in an ordinary, or fascial, tear. The rectal, or vaginal, sutures are, of course, the first to be introduced. (If catgut is used for the closure of the bowel, their method of introduction is left to the choice of the operator.) If silk, silver wire, or silkworm-gut is used, they must be introduced so as to be tied, twisted, or shotted on the vaginal side. After the tear into the recto-vaginal septum has been closed, attention must be made to bringing the ends of the sphincter accurately into apposition. For this purpose the needle must be introduced at the edge of the torn muscle, directed upward, then backward, to the internal edge of the muscle, so as to bring the retracted central portions to a level. If this procedure is adopted on both sides, a flat surface of muscular tissue is obtained, and the apposition will be complete. This I will attempt to show by diagram. Failure of this operation is

easily discoverable. If a fistula persists, there is generally more or less complete failure of the operation, and the desired effect is not obtained. To insure the complete success of the operation extreme care is necessary to restore the bowel and to treat the sphincter as as integral portion of the bowel, bringing the sutures down so as to leave no pocket between the bowel proper and that portion into which the sphincter is inserted. The ability to operate successfully upon the torn sphincter indicates a proficiency and delicacy in plastic surgery of which any surgeon so professed must possess. To the general practitioner of obstetrics the ability to perform the operation will be a universally conceded tribute to his skill, often saving him from much unkindly criticism, and save his patients as well as those of his professional neighbors much suffering and inconvenience.

The tears of perinea are often unavoidable, but their restoration is always possible, and their neglect is criminal.

DISCUSSION.

Dr. Joseph Taber Johnson, of Washington, D. C.—Mr. President: I hesitate to step into the arena after a giant like Dr. Price has occupied it, but since I have been asked to say a word on this subject I cannot refuse to do so. A great many points might be profitably referred to in this discussion, and among them is the one in reference to the frequency of these tears where they have not been discovered at first by the obstetrician, and allowed to go fifteen, twenty, or even thirty years without being repaired. As mentioned by the essayist, it seems to me the great fault is not so much with the gynecological operator as it is with the obstetrician. We have often heard physicians, especially those who practice some distance from the great medical centres, state that they have been practising obstetrics anywhere from fifteen to thirty years and have never seen a laceration of the perineum. The explanation of this probably occurs to you all. You have probably said, in lecturing to students, that the reason physicians do not find perineal tears is because they do not look for them, and do not recognize them when they do look for them.

These perineal lacerations are not really lacerations through the whole perineal body, but separations of the fascia, levator ani, and transverse perinei muscles, while the mucous membrane inside and the skin outside are not torn at all. You have here a practical laceration of the perineum, while if you separate the woman's buttocks, spread the fingers out in this way (illustrating), you can demonstrate that the skin and the mucous membrane are not injured. The woman has no perineal support, while the skin and the mucous membrane of the vagina are not torn through. It is this separation of the fascia in these cases which Emmet has spoken about so many times, and which he dwells on so emphatically in describing his operation for restoration of the perineum.

I have had the pleasure of seeing the beautiful artistic work of Dr. Emmet which Dr. Price has so well described. Emmet has said it was of no more use to sew up the skin for the cure of these cases, as was done and described by Agnew in his book on the perineum, than it was to sew up the slit in a woman's drawers. These complete tears of the perineum are very much more evident to the discoverer than the tears I have spoken of. It is the complete tears which have been much more frequently operated on than the obscure ones.

As to sutures, I have been using silkworm-gut. I have not acquired the skill in using silver wire which others have, and I much prefer to use that with which I am most familiar. I cannot see but that I get just as good results as are obtained with the wire.

What Dr. Price has said about the dimple on each side and sewing up the sulci before you operate on the vagina, and lifting up the crest of the rectocele, are the great points in the success of this operation.

Without taking up the further time of the Association, I would say in conclusion that by timely operations obstetricians can save hundreds of women from pain and suffering, instead of waiting for years, and thus entailing a long list of complicating sequelæ. In referring to this operation, teachers of obstetrics should lay great stress upon its thoroughness and completeness.

Immediate perineorrhaphy should be done well. If the torn surfaces are not accurately approximated, septic fluid may collect

behind the barrier built up by the operator, and that woman's last state may be worse than her first.

Dr. W. L. Robinson, of Danville, Va.—I am very glad that Dr. Price has brought this subject before the Association. You gentlemen who live in small cities have already found one thing, and that is, that when you go to the medical centres of the present day, everything is abdominal section. It seems to me the whole profession is travelling that way to the exclusion of plastic surgery. What we are working for is to relieve human suffering, and those of you who have done plastic work and restored women to perfect health know how a very little operation from the outside will bring comfort. I am glad the Doctor has brought this subject before us, because he has the reputation, and justly so, of being a great abdominal surgeon. His presentation of the technique, as I have seen the operation performed, is one of vast importance. I am satisfied that Dr. Johnson is right—that too many of us are prone to overlook tears of the perineum and do not do the surgery that is necessary just at the proper time—immediately after labor. These things ought to be taught more in our medical societies and more extensively practised.

Dr. Hunter McGuire, of Richmond, Va.—I want to occupy only a minute or two. It is to be inferred from the paper just read that it requires an artist like Dr. Emmet or Dr. Price to do the operation outlined by Dr. Price to-day, consequently it is a serious objection to any operation when we have to send many hundred miles to get somebody to do it. I think the operation Mr. Tait has given us (if he deserves credit for nothing else, he deserves it for this) is so simple that we can all do it, and the perineum is completely repaired by it. If you take any torn perineum, stretch it a little bit laterally, you will see that while it is torn vertically that the scar is horizontal. All these tissues are ripped vertically, but when you look at a scar it is a horizontal scar. The operation of Tait simply restores the part to its original position. I use in this operation silkworm-gut; I have seen so much harm from the use of catgut elsewhere that I have almost abandoned it. The longer I use catgut the more uncertain I am about it. I rise simply to make a plea for the simple operation devised by Mr. Tait, which we can all do.

Dr. Rufus B. Hall, of Cincinnati, Ohio.—I congratulate

the essayist on his excellent paper and upon the sound principles of the technique of the operation which he has given us to-day. I want next to say that I differ from the gentleman who just took his seat in reference to the two operations. In my judgment, any man who is capable of making any operation in surgery is competent to make the operation of Emmet. If we were to choose the flap-splitting operation because it is easy, then we ought not to make operations. We should give the patient the best or nothing. We want to find out which is the better of the two, and then select the one which is. I have made the flap-splitting operation many times. I have quite a number of cases where I resorted to the flap-splitting method for laceration of the perineum, and all of these cases, on superficial examination, have perfect perinea to the eye. They retain feces and gas. They are satisfied with the operation; I am not. I am not satisfied with it because the results are not perfect in all cases, and I have about abandoned the method. It is true it is an easy operation to make. You can make it in five to seven minutes at the outside, with three or four stitches, and it looks all right; but it does not bring the best results for the reasons given by the essayist. The difference in results in the two methods is altogether in favor of the method described by Dr. Price this morning.

In reference to sutures, it is surprising sometimes how we differ in our opinions. The last place about the body in which I would want to place a catgut suture is in this locality. I scarcely ever use them. Silkworm-gut or silver wire is good enough for me. Here, where there is danger, we must admit the possibility of leakage of gas, and the recto-vaginal septum is just where we get contamination. I have seen trouble follow from catgut in this operation, and that is my explanation of it.

Dr. George J. Engelmann, of St. Louis, Mo.—I regret very much not having heard the undoubtedly instructive paper of Dr. Price, consequently I am not in a position to discuss it, nor would I question the position he takes, if I am right in my presumption that he battles against the general use of the flap-splitting operation. From what I have gathered from the remarks of preceding speakers, he places no faith in the Tait operation, and believes that the results of that operation are imperfect. In this I agree with him; it has proven so in the hands of the average

operator, and I have found it likewise in a large proportion of the cases I have examined which have been operated upon by other surgeons—I will not say by Mr. Tait himself, but by good operators—and I must confess that, as a rule, the result seemed to me an imperfect one. I must mention, however, some admirable results achieved by Sänger, who has somewhat modified the operation; but the principle which is in question, the result of the flap operation, remains the same as we generally see it: it is rather a skin perineum—at least not the solid body which we should attempt to form, and I have used the Hegar operation with such modifications as each case demands. I believe that the flap-splitting operation is not one which will repair the vagina and the rectum thoroughly, as well as the perineum; that I think we can only do by such operations as those of Hegar, Martin, or Emmet. Perhaps I have not been able thoroughly to understand Mr. Tait's operation, but I certainly have not had the results from this method which we could hope for or which we should have. I regret very much to say this, because the flap-splitting operation is more simple and rapid; other operations take far more time, especially by reason of the careful dissection which is necessary, but I believe that the results are better, and I wish to thank Dr. Price for this paper; his experience gives authority to his opinion, and his progressive ideas assure us that he would not take a position against this innovation, which is so tempting on account of its simplicity, if he could achieve the same good results thereby.

It is not our province here to treat of preventive gynecology, and yet the point made by Dr. Price is a strong one, and should be heeded; it is in the lying-in room that the first step is to be taken: the examination post partum, the investigation of the perineum would prevent much suffering. The immediate operation is a simple one, and by repairing the lacerated perineum at once suffering of the patient and work for the gynecologist would be done away with. Another examination, one which is so rarely made, is ante partum, during the last month or two before labor, as regards the position of the child and the size of the pelvis. If these examinations were made by the obstetricians, many of the obstetric operations now performed would become unnecessary.

Dr. Richard Douglas, of Nashville, Tenn.—If anyone had

informed me that I came so far as Charleston to place my head deliberately in a noose with Dr. Price at the end of it, I am sure I could hardly believe him. I would not be true to myself, true to my own experience, however, if I did not say something in defence of the Tait operation. I am deeply grateful to the gentlemen who have spoken and brought out the principles of the technique of the operations that have been described. I recognize and appreciate them. I fully appreciate the fact that it is more the relaxation of fascia, more the rupture of the ligament and the drawing back by the transverse perinei that give us the condition of relaxation of the pelvic outlet, than absolute separation of the so-called perineal body. The operation of Dr. Emmet is unquestionably the preferable one for the majority of cases. It is an operation that, I think, few gentlemen can perform who have not seen much of Dr. Emmet's work. In those cases where you have had relaxation of the fascia you necessarily have subinvolution of the vagina, and these are the cases particularly to which the Emmet operation is adapted; but I must assert that I have, satisfactorily to myself and beyond criticism of my colleagues, secured results by the Tait operation that have been good and eminently satisfactory for a period of two or three years.

Dr. George H. Noble, of Atlanta, Ga.—I am satisfied from my experience that the operation described by Dr. Price is a good one. It accomplishes the object that we desire to attain, and approaches as near as possible the natural condition of the part. It is true it is not a quick operation. I must confess that I have not done the Tait operation. Realizing the importance of Dr. Emmet's method of uniting the sphincter muscle in an end-to-end approximation, also the levator ani, which retracts in a similar manner as the sphincter, it occurred to me that the flap-splitting operation was devised more for the purpose of adding dash and brilliancy to the reputation of the operator than for the benefit of the woman. I think so far as the operation goes that it is as near perfect as need be. I have had some difficulty in finding and approximating the levator ani muscle, but learned quite readily to approximate the ends of the sphincter muscle. I use as a suture silver wire (No. 29 or 30), being perfectly satisfied with it, and do not care to employ anything else in complete lacera-

tions. It is soft, easily handled, and is as good as silkworm-gut. Catgut is my favorite suture in partial lacerations that place no tension or strain upon the stitches.

Dr. Ernest S. Lewis, of New Orleans, La.—It would take too much time to discuss fully the paper we have listened to with so much interest. The Emmet operation, so graphically described by Dr. Price, is the best that has ever been proposed for the repair of the perineum, particularly in those cases with great relaxation or rectocele, and in subinvolution of the vagina. In cases of simple laceration, however, where no great amount of relaxation exists and no prolapse of the posterior wall has occurred, the ordinary operations succeed equally as well, consuming less time and requiring less chloroform. For these reasons the Emmet operation should be restricted to cases in which the conditions I have mentioned obtain.

Dr. A. M. Cartledge, of Louisville, Ky.—It seems to me that this is to some extent an experience-meeting, and the subject has been so fully discussed that I shall be very brief. I believe it is the experience of every surgeon that perineorrhaphy is one of the most difficult plastic operations in surgery. I think the drift of the discussion indicates that. I want to say that I believe few Americans have properly understood the Tait operation. It has been described by every student who has observed Mr. Tait perform it, and in a different way. I defy any man to get the same conception from reading an account of the description of this operation from anyone who has seen Mr. Tait perform it. That has been the experience of men with whom I have conversed as well as my own. It seems to me the men who talk about doing the Tait operation in five or ten minutes in a complete laceration, or a laceration where there is a severance of the subcutaneous muscular structures of the perineum, have no adequate conception of what the Tait operation is. I do not advocate the flap-splitting method to the exclusion of the Emmet operation. The former method, however, is much simpler. It saves time and blood, and, when correctly performed, fulfils the principles or indications of treatment as well as other operations devised for this trouble, provided there is no extensive vaginal tear.

Dr. W. E. B. Davis, of Birmingham, Ala.—At the meeting of the American Association of Obstetricians and Gynecologists,

recently held in Toronto, I took the position that I shall take here, namely, that a good deal depends upon the operator in thoroughly understanding the operation that he does. The Martin operation accomplishes the same thing that Emmet's does. The flap-splitting operation of Mr. Tait, if properly done, accomplishes very much the same thing. In discussing this subject a great many surgeons fail to distinguish between the vaginal and perineal operation. The operation is generally largely done upon the vagina, and not upon the perineum. In resorting to the flap-splitting operation you can go as high up into the sulci as you want to, as high as Dr. Emmet goes in his denudation. I see no particular advantage in the process of denudation that he adopts and follows. You can lift the mucous membrane as far as you want to and carry the denudation in any direction you desire. If you do not want to leave the mucous membrane, denude it in this way and cut it off with scissors. You thus save a great deal of time. You can do in a few minutes what it would take many minutes to do by the Emmet method. Dr. Price will tell you that he frequently runs a scissors through those cases in which the flap-splitting operation has been resorted to. That Dr. Emmet's operation cannot be excelled so far as results are concerned, you will all agree; but it takes a great deal of time to perform it. The other method enables us to do the work in a much shorter time, and does not require much skill.

Dr. Cartledge.—The operation requires as much skill except the introduction of sutures.

Dr. Davis.—It takes a great deal of time to denude by the Emmet process. If you do not want to leave mucous membrane, clip it off afterward; do not adopt Emmet's method of denudation.

Dr. Joseph Price, of Philadelphia.—Unfortunately the discussion has drifted into two operations for the repair of perineal injuries. I did not intend to discuss both of them.

Dr. McGuire.—Suppose you were called to a woman who had just had a perineal tear, what sort of an operation would you do?

Dr. Price.—I would do an operation that would restore the perineum to as natural a condition as possible. A great deal depends on whether the tear be partial or complete, central or lateral, and the difference is great in some cases. (Here Dr.

Price demonstrated by diagrams his method of dealing with complete, lateral, and central tears.)

I have read three papers recently on plastic surgery, because I felt it was a lost art, and I began to feel that obstetrics was almost a lost art. To illustrate: We will suppose that in the medical colleges of Charleston, New Orleans, Philadelphia, Washington, Baltimore, etc., there are twelve professors of obstetrics. Now, if there was a medical society meeting to-morrow and they were present, there is no doubt that most of them would read papers on gynecological subjects. They would doubtless report cases of laparotomy instead of dealing with some obstetrical subject. If a professor of obstetrics has to lecture to his class on placenta prævia or post-partum hemorrhage, he does so with the preface: "Gentlemen, I am sorry I have not got an ovarian cyst to show you, which I just removed." If Philadelphia or any other city were to elect five or six professors of obstetrics to-morrow, most of them would appear in medical societies with papers on gynecological subjects. The trustees of medical schools should take more interest in seeing that this important branch of our profession is carefully taught by practical teachers. Too many professional men are over-enthusiastic in regard to performing and writing about laparotomies to the neglect of plastic surgery. But one man in this country has manifested the proper enthusiasm in plastic work. You all know him by reputation; I refer to Emmet.

OBSERVATIONS ON THE ACTION OF CHLOROFORM ON THE FUNCTIONS OF THE HUMAN BRAIN AND SPINAL CORD AS WITNESSED IN EXTENSIVE INJURIES OF THE CRANIUM AND BRAIN.

By Bedford Brown, M.D.,
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In entering on this interesting and important subject I am aware that I am engaging in a field of study and observation comparatively unexplored and unknown. The observations and investigations designed to be published to the world in this paper are based upon ocular demonstrations of the action of chloroform on the human brain while exposed in extensive compound comminuted fracture of the cranium and laceration and injury of the membranes and brain-substance itself. Two most valuable and excellent opportunities have in the past come under my care and offered themselves for study and observation of this kind.

The first case of this kind which came under my care occurred in the year 1860, and was published in the October number of the *American Journal of the Medical Sciences*, and was extensively republished, but probably did not make the impression that it deserved because of the excitement and turmoil of the Civil War that soon followed. The title of this paper was: "A Case of Compound Comminuted Fracture of the Cranium, Severe Laceration and Destruction of the Brain, followed by Fungus Cerebri, and terminating in Recovery."

The second case that occurred was that of a Confederate soldier in one of the great battles in Virginia. In this case

a ball or grapeshot as large as a hen's egg had entered the centre of the frontal bone or os frontis, penetrated the frontal lobes to the depth of an inch and a half, and had imbedded itself in the cerebral substance, and was tightly wedged in the frontal bone.

I will mention the fact here that in this case the ball was doubtless, for obvious reasons, a spent ball. The fractures in both of these cases were in the os frontis, and in both there were extensive injury and laceration of the frontal lobes of the brain and considerable loss of cerebral tissue. But, notwithstanding these extensive injuries of the organ in both, there was no loss whatever of consciousness or sensation.

In both cases the necessary surgical operations lasted over an hour, and because of the acute sensibilities of the patients the free use of chloroform was required during the entire operations and subsequent dressing of the wounds. In the first case the patient was brought under the anæsthetic compound of chloroform three parts, ether one part, as many as four different times as the effects would pass off; in the second case the patient was placed under the effects of chloroform alone as many as three different times; so that the action of the exposed brain could be accurately observed and studied, both when under the influence of chloroform and when without it. To enable us to comprehend clearly the action of chloroform on the human brain exposed to the naked vision and to form an idea of the conduct of the organ in a state of anæsthesia I will here quote portions of the history of the first case relating to this question.

In this case the fracture occurred in a colored boy from the kick of a newly shod horse, and occupied a large portion of the os frontis; the opening in the skull would have measured two inches horizontally and an inch and a half in width. The fractured bones were driven into the frontal lobes fully an inch or more, lacerating extensively the membrane and lobes, considerable portions of the destroyed brain-substance having been forced out on the surrounding skin. A large amount of blood had escaped and was still escaping from the wound.

Notwithstanding this extensive injury, the consciousness and sensibilities of the patient were so acute, and his resistance so uncontrollable, that anæsthesia was imperatively required. Having no guide to govern myself and assistant in forming an opinion of the effects of this class of agents on a brain so dangerously injured, we discussed the probable results with caution and deliberation.

Up to that time there had been no case placed on record of the use of anæsthetics in extensive injury of the cranium and brain, and consequently no experience in their effects in such cases, and I am not aware even at the present time that any such case has been placed on record since. Fearing less the pure chloroform might be too depressing, I determined to use a combination consisting of chloroform three parts, ether one part, hoping that in some way the ether might counteract the depressing effects of the chloroform.

After the patient had been placed thoroughly under the influence of the anæsthetic we found on examination that there was an opening in the os frontis two or rather more than two inches long, extending across the forehead, and one inch and a half wide, and the fractured bones corresponding to this opening had been driven back into the frontal lobes of the brain fully an inch in depth, lacerating the membranes and destroying the brain-substance to that extent. Ten or twelve pieces of bone, some two inches long, were removed, having been imbedded in the brain, the loose portions of membrane cut away and removed, and then the lacerated and detached portions of brain-tissue, amounting to two tablespoonsful, were carefully removed, and the wound, which was a ghastly one, was sponged out carefully with boiled water until all hemorrhage had ceased. Through this very extensive opening in the skull the brain could be seen perfectly exposed to view, and through which we could observe the physical action of the brain perfectly, both under the influence of chloroform and when free from it; and we could also observe its action under the influence of stimulants. There could not have been under any circumstances a more favorable opportunity to witness

and deliberately observe the results of the action of chloroform on the functions of the human brain than this case afforded. On this large area of exposed brain we could see the effects of the anæsthetic plainly on the rhythmic pulsations of the brain, also its wonderful effects on the arterial tension and circulation of that organ, and finally on the cerebral hemorrhage. On the peculiar action of chloroform on the human brain, whether this agent tended to diminish or increase its circulation, whether it produced a state of anæmia or congestion of that organ, was in the professional opinion an unsettled one. The facts in this case I think settle this question definitely. We observed that the first perceptible effect of the anæsthetic on the action of the brain was, when under full anæsthesia, a marked and sudden diminution of hemorrhage, which previously had been free. Then, when the anæsthetic influence subsided, there was return of active hemorrhage. This fact indicated to us that the action of chloroform was to lessen and reduce the cerebral circulation beyond a doubt, and when the wound had been cleaned of all débris of fractured bone, membranes, and lacerated brain this supposition proved to be correct. The operation was in progress about one and a quarter hours, and during that time the patient was placed under the anæsthetic four different times as the effects would subside. On these occasions whenever the patient was fully under the effects of the anæsthetic then the hemorrhage would subside, the rhythmic pulsations of the brain would cease, the exposed surface of the brain would lose its florid complexion and assume a decidedly pale and ashy appearance, and at the same time the respiration would become slow, the impulse of the heart become feeble, and the extremities rather cool and the pupil contracted. On the contrary, when the effects of anæsthesia would begin to subside, then hemorrhage, at first slowly, would begin to return, the cerebral pulsations begin to reappear, and the organ would again assume a florid appearance, with indications of returning turgescence.

When the patient was fully under the influence of chloro-

form the circulating volume of blood in the brain became perceptibly reduced. On the contrary, when the effects of the anæsthetic passed off the normal amount of blood returned to the brain as indicated by the change from its pallid complexion to the florid appearance of congestion. These peculiar phenomena recurred as many as four different times in this case during the operation, and would indicate that death from chloroform does not result from congestion, but anæmia of the brain.

The combined action of chloroform on the cerebral pulsations and the function of respiration. What connection has the function of respiration with the state of the cerebral pulsations? is a question not devoid of interest. In this, the first case, it was observed that whenever the pulsations of the brain were full, were of a heaving, impulsive character, the respiratory act was correspondingly full, deep, and complete. But no sooner did these pulsations show an indication to diminish in force under the action of chloroform than the respiratory act became slower, less deep and complete. These peculiar indications were so plain and perceptible as to attract our attention.

Effects of struggling, or muscular exertion, or mental excitement of the patient while inhaling chloroform, on the brain. The effects of these influences on the functions of the brain were positive and decided. Any struggling, attempt at resistance, unusual muscular exertion or mental excitement produced marked and sudden, even violent, change in the cerebral circulation. In this case, after the wound was cleaned and the patient had regained consciousness, it became necessary again to resort to anæsthesia, to insert the numerous sutures; the patient became violently excited and gave energetic resistance to our efforts to chloroform him. Immediately the hemorrhage returned, the cerebral pulsations became violent, and the brain intensely congested until complete anæsthesia was accomplished, when the excited organ became perfectly quiet, pale, and all hemorrhage ceased. Under the effects of mental excitement and muscular exertion the cerebral pulsations became not only forcible but exceedingly irregular, and there

was always irregularity of the respiratory and cardiac action in corresponding degree. These facts teach us an important lesson in the administration of anæsthetics, and that is, to avoid, if possible, any mental excitement or physical exertion of the patient while undergoing anæsthesia for the purpose of preventing violent and unusual changes in the circulation both of the brain and medulla oblongata, the centre of respiration. At this critical moment, when the system is on the verge of passing from a state of consciousness to one of profound insensibility, any violent excitement or sudden increase of the cerebral circulation, or any considerable irregularity, might give rise to a corresponding depression of circulation, and produce fatal consequences. This important fact in regard to the effects of struggling or resistance on the circulation of the brain indicates to us very positively the necessity of using gentleness, caution, moderation, and the avoidance of force in the administration of chloroform. In this way all shock to the brain and centre of respiration may be avoided.

The second case was that of a Confederate soldier who was brought into my field hospital during one of the great battles near Richmond, Virginia. A spent grapeshot as large as a hen's egg had imbedded itself into the os frontis and to the extent of an inch and a half into the frontal lobes. The patient was perfectly conscious, sensible, and possessed perfect control over the muscular system. The ball was wedged tightly in the skull, and for its successful removal it was necessary to trephine a ledge of bone to enable us to use the elevator to force it out, and as the wounded man requested chloroform preliminary to the operation he was placed thoroughly under the anæsthetic. I will state here that no ether was used to my knowledge in the Confederate Army. After the removal of two semicircular pieces of bone the elevator was passed underneath the ball, and it was pryed out, leaving a wound in the frontal lobes an inch and a quarter in depth, with all the fractured bones driven into the brain, lacerating that organ extensively. Under the action of the chloroform the hemorrhage had ceased and the cerebral pulsations were

nearly suspended. After the wound was cleansed of all fractured bones, lacerated brain and membranes, we had a wound two inches in diameter and an inch and a half in depth. Up to this stage of the operation the patient had been under the anæsthetic twice, and at each time the cerebral pulsations were very nearly suppressed, the hemorrhage ceased, and the surface of the exposed brain became pallid. On the contrary, when the effects of the anæsthetic passed off the regular rhythmic pulsations would return, the hemorrhage be renewed, and the brain become florid. When beginning the administration of the anæsthetic any struggling of the patient was certain to give rise to increased pulsation and activity of the cerebral circulation and symptoms of congestion, until unconsciousness ensued, when the same pallor of the brain and subsidence of rhythmic action and all hemorrhage invariably followed the action of chloroform. These peculiar results invariably followed the action of chloroform on the brain of the second as were observed in the first case. In this case the chloroform was administered as many as three times, and in every instance the results were identical in effect and in order.

The history of this case cannot be regarded in any other light than as a complete confirmation of the facts elicited in the first case: that the action of chloroform exerted a potent influence on the circulation of the brain; that it was not an excitant of that organ, and that it does not produce congestion of its circulation, or even an increase; that it reduces cerebral circulation and its rhythmic movements; that it controls hemorrhage. And finally, to be more definite, that it can reduce the circulation of the brain from 20 to 30 per cent., and while that state of anæsthesia continues a temporary state of anæmia, not only of the brain itself, but of the medulla oblongata and spinal cord results. It would appear that it requires a longer time and a larger amount of chloroform to produce a serious degree of anæmia of the medulla than of the cortex of the brain, as the anæsthetic influence is primarily on the cortex and secondarily on the medulla. An absolute state of anæmia

of the medulla would insure certain death from suspension of respiration. It is highly probable that ether acts differently on the brain, that it produces a state of venous congestion similar to that of alcohol when taken internally.

The positive and unmistakable evidence in both of these cases goes to establish the fact that the anæsthetic action of chloroform on the human brain and cerebral anæmia are invariable accompaniments in the relation of cause and effect. It will be observed that in the two cases reported, during the surgical operations performed, the first patient was subjected to the influence of chloroform four times and the other three times. At each administration from the time that the anæsthetic influence began the circulation in the brain began to diminish, the hemorrhage and pulsations to decrease, until under full anæsthesia complete anæmia ensued.

Effect of alcoholic stimulants on the brain when under chloroform-narcosis. This would appear to be a favorable stage to allude to the results of observations on the action of stimulants on the human brain when under chloroform-narcosis, as witnessed in the cases reported, as I had a favorable opportunity on these occasions to witness both the conduct of the brain under simple chloroform and under both chloroform and whiskey.

At one period during these tedious operations, both lasting an hour or more, the patient showed indications of failing respiration and cardiac action, when it became necessary to resort to stimulants. Both patients were in a profound state of narcosis, and consequently they could not be given by the mouth, and at that time the hypodermatic syringe was unknown, hence they were given per rectum. The indications during this profound state of narcosis were almost entire suspension of cerebral pulsations, extreme pallor of the brain, entire cessation of hemorahage, slow, shallow respiration, and feeble pulse. In the case of the boy, an ounce of diluted whiskey was injected in the rectum. In fifteen minutes the brain began to respond, feeble pulsations beginning, slight return of hemorrhage, and then the circulation in the brain

became more active, and the organ lost its extreme pallor and became more florid, the respiration became more regular and deeper, the pulse fuller, more regular and stronger, until there were assurances of reaction, when the operation was continued. In this case there was no further necessity of resorting again to the use of stimulants.

In the case of the wounded soldier there were two occasions of rather alarming depression from chloroform-narcosis during the operation, which lasted an hour and a quarter, when it became necessary to resort to stimulation.

The hemorrhage in this case while the patient was under the profound influence of chloroform was observed suddenly to cease, the brain to become pallid, the pulsations to be almost entirely suspended, the respiration to be very feeble, slow, and shallow, and the heart to show indications of failure. Two ounces of diluted whiskey were promptly injected into the rectum. In fifteen or twenty minutes the heart began to respond, the respiration to improve, the hemorrhage from the brain to return, and the complexion of the organ to become more florid, and then renewal of pulsation. I am satisfied that in each of these instances of threatened collapse the primary action of the alcohol was on the heart. Previous to a return of blood to the brain, of hemorrhage, of pulsation, or of increase of respiratory action there was increased action of the heart, the pulse becoming fuller, stronger, and more regular. Relative to the action of alcohol on a patient when under the influence of chloroform, and more especially on the functions of the brain under these circumstances, the results of the administration of stimulants in these two cases while in a state of chloroform-narcosis bordering on collapse indicate in a manner beyond a doubt that stimulants given in this condition exert a powerful exciting and energizing effect, first on the heart, then on the circulation in the brain and medulla, and as soon as the medulla, the centre of respiration, is touched by the alcoholic stimulant the function of respiration begins also to respond.

In the process of restoration from chloroform-poisoning

when stimulants are resorted to, that their primary action is on the heart before the stimulating influence reaches the brain, I have not only the facts in these two cases to show, but also facts derived from cases of true chloroform-collapse.

In a case of this kind of a female who secluded herself in a room and began inhaling from a six-ounce bottle of chloroform, to relieve neuralgia, she was found in a profound state of collapse, the bottle turned upside down, the bedding saturated, the pulse and respiration had ceased, the sounds of the heart absent, the pupils dilated, temperature 95°. In the process of resuscitation four ounces of whiskey were injected hypodermatically, the head was lowered below the level of the body, nearly a half-grain of strychnine in all was also injected, and artificial respiration resorted to. But the first to respond to these powerful stimulants was the heart, then the respiration, then in turn the function of sensation to the hypodermatic needle, and lastly consciousness.

The result of personal experience in the use of stimulants in chloroform-narcosis, I think, will bear me out in the assertion that the combined action of alcohol and strychnine is better than either alone. A large quantity of whiskey given in chloroform-collapse might possibly tend to increase the relaxation of the heart; but when given in connection with strychnine this tendency is corrected. I feel satisfied that when stimulants are given either before or during chloroform-narcosis they should always be given in connection with strychnine, as this combination affords the most potent excitants of the centres of respiration, circulation, and consciousness that we possess.

In regard to the propriety and advantage of resorting to stimulants in chloroform-poisoning, the evidences elicited in the two original cases reported would seem to establish the fact that they act as potent energizers of the centres of respiration, circulation, and consciousness.

Cerebral anæmia caused by the action of chloroform in its relations to the functions of respiration, circulation, and heat-generation. The diverse influence exerted by the opposite con-

ditions, cerebral anæmia and cerebral plethora, on the functions of respiration, circulation, and heat-generation, were among the most interesting phenomena witnessed in the history of the two cases cited. While under chloroform, as the cerebral anæmia increased, there was observed a simultaneous decline in the functions of respiration, of circulation, and then in heat-generation, and this decline steadily progressed until the anæsthesia was complete and cerebral anæmia reached its lowest stage, or, in other words, until the reduction of circulation of the brain was lowered to a point where all hemorrhage ceased, the brain had lost its florid complexion and had assumed a pallid hue, and nearly all pulsation had been suspended. When the cerebral anæmia had reached this point the respiration was manifestly reduced in frequency and force, the cardiac action became slow, arterial tension markedly reduced, and, correspondingly, there was reduction of heat-generation. On the contrary, as this cerebral anæmia passed off when the anæsthetic was suspended, there was return in force and depth of respiration, in arterial tension, cardiac force, and heat-generation.

The action of chloroform on the human system must be regarded in the light of a complex action, and not, as too many regard it, as a simple one. Cerebral anæmia and abolition of the faculty of consciousness and the function of sensation absolutely go hand in hand; they begin progress and terminate simultaneously. Then, when anæsthesia is pushed still further, anæmia of the medulla and spinal cord commences, and as it progresses the vital functions of respiration, reflex action, circulation, and heat-generation succumb, until when the anæmic condition of the brain reaches a point where there is not sufficient arterial blood furnished the brain and medulla to sustain vital action, then the respiratory centre begins first to indicate signs of failure. Then follows paresis of the vasomotor or circulatory centres, and finally all reflex action.

It would appear that in this process of suspension of the vital functions from chloroform-narcosis the various centres

succumb in the following order: First, consciousness and sensation; the next in order is that of respiration, then circulation; lastly, the entire functions of the spinal cord and reflex action. When the action of chloroform is confined to the brain alone it may be in a state of profound narcosis for hours with impunity, provided anæsthesia goes no further. But we must not encroach upon the medulla to any serious extent, or we promptly suspend respiration. We can with impunity continue a state of anæmia of the cortex of the brain, the centre of consciousness, for a considerable length of time, wherein the circulation of the brain is reduced from 25 to 30 per cent. We often see this state of affairs exemplified in cases of syncope, which is a harmless condition. But we cannot carry chloroform-narcosis to that point, when the circulation in the medulla and vasomotor centres is diminished 30 or 40 per cent., without producing paresis of those organs and suspension of their functions.

In regard to the quantity of chloroform required to reduce the circulation of the brain to a point compatible with the anæsthetic state, there is a marked difference in different individuals. In the first case reported—that of the boy of nineteen—one drachm of the chloroform and ether mixture produced profound anæsthesia, while in the second case—that of the adult—it required three or four drachms to produce a state of anæmia of the brain and unconsciousness. The less difficult it is to effect this anæmic state of the cerebral circulation the more readily was anæsthesia accomplished. On the contrary, when circulation of the brain was excited by any cause whatever, and its action and arterial tension elevated from mental excitement, from muscular exertion, as violent struggling or resistance, it required a much larger quantity of the anæsthetic and a longer time to induce cerebral anæmia, and consequently anæsthesia. In both of these two cases reported it may be stated as a fact based on incontestable evidence, that in no instance in all these administrations of chloroform was the patient brought to a state of anæsthesia without the preliminary cerebral anæmia, and in no case could

anæsthesia be effected while the circulation of the brain was active and vigorous.

The safety of anæsthesia in operations for injuries of the cranium and brain. There is a certain class of injuries of the cranium and brain where it may become necessary to resort to anæsthesia, either to control the patient or save him from unnecessary suffering. Probably the great majority of such patients do not require it because they are already in a state of coma. Then it can apply to only that class in which consciousness is either wholly or partially retained.

We have seen that the action of chloroform on the brain is to reduce its circulation from 30 to 40 per cent. and to arrest cerebral hemorrhage. These facts are to constitute our guide in the application of the agent in any given case. In our operations in such cases it is desirable to produce unconsciousness and insensibility, and at the same time reduce the momentum and quantity of the cerebral circulation, and to arrest excessive hemorrhage without impairing respiration. For instance, in cases of injury of the brain where the patient, though in a state of semi-consciousness, is restless, struggles against all interference and resists treatment, in cases of delirium, or great mental or nervous excitement, and when the hemorrhage is copious, even though in a semi-comatose state, chloroform is admissible. It not only quiets nervous excitement, but reduces cerebral congestion and engorgement and saves the loss of blood. On the contrary, in cases of injury of the brain or in injury in other portions of the body, accompanied with excessive shock and depression of the circulation and reduction of blood-supply, the brain is already in a state of anæmia, and to reduce its circulation still further would be, in all probability, to destroy the life of the patient.

Suppose, for instance, a case of this kind. We are called to operate upon a patient who has received a severe injury and is laboring under a tremendous shock, and the blood-supply to his brain from shock or hemorrhage has been reduced 40 to 50 per cent. Would it be justifiable under such circumstances to give an agent, as chloroform, which will reduce

the cerebral circulation at least 20 per cent. more. Yet this very result does actually occur when we give chloroform, when the circulation of the brain is reduced 40 or 50 per cent. from shock or hemorrhage. We can calculate very accurately—I may say to a certainty—that chloroform is capable of reducing the cerebral circulation from 30 to 40 per cent., and possibly more. Hence we have in this fact a valuable guide in giving chloroform in shock. If we could all have the rare opportunity of observing a human brain exposed through a large open window in the skull, with every action and every change in its circulation and rhythmic movements exposed to view, we could see under the action of chloroform the pulsations of the organ grow fainter and fainter, and more and more feeble, until they are reduced to a mere tremor, and finally almost to cease entirely. In the meantime the surface of the organ is losing the turgid, florid appearance, is growing paler and paler, and actually appears to diminish in volume. We know by these indications that the volume of blood circulating in the brain has been reduced to the border-lines of danger. And it can be stated with certainty that in every case where anæsthesia from chloroform is produced these wonderful and interesting changes are in actual progress in the brain. In my personal observations of the action of chloroform in these cases on the functions of the brain I found a remarkable correspondence between that ashy pallor of the lips and prolabia peculiar as an initiatory symptom of chloroform-collapse, and that same corresponding ashy pallor of the surface of the brain from the same cause. In threatened collapse deadly pallor of the brain appeared invariably in unison with an ashy hue of the lips. These peculiar indications appeared in both cases. Thus, in the peculiar extreme deadly pallor of the lips and prolabia we have a very correct and certain index of the true condition of the cerebral circulation.

Relationship of the degree of arterial tension in the pulse and brain to the respiratory capacity. In a state of anæsthesia in all cases there is diminution of a certain per cent. in the capacity of the lungs for inhalation. Probably, in a slight degree,

the respiratory centre is affected in all cases of profound anæsthesia, and the capacity of the lungs for inhalation reduced in corresponding degree. Probably 5 or 10 per cent. less of air is inhaled in every case of anæsthesia, but when it reaches 20 or 30 per cent., then we are approaching a state of asphyxia. During the operation in the second case reported there were two occasions in which respiratory failure was threatened, and on both of these occasions there was marked decline in the arterial tension in the brain and pulse, and when the lungs were tested by auscultation it was found that atmospheric air did not reach the bases at all, causing a probable reduction in inhalation of 20 per cent. On the contrary, when the arterial tension in the pulse and brain was restored the respiratory capacity increased to within 95 per cent. of the normal. As observed in this case, the rise and fall of arterial tension in the pulse and brain and the respiratory capacity correspond in precise ratio. These facts would go to indicate that an accurate and perfect consonance of action of the respiratory and circulatory centres exists in chloroform-narcosis.

In the decline and failure of arterial tension in the brain and pulse there invariably is associated with the condition *shallowness* of respiration, so much and so justly dreaded by all surgeons and anæsthetists. The diaphragm acts irregularly and spasmodically, and the noise made by the effort at inhalation somewhat resembles hiccough, while the intercostals do not elevate the ribs sufficiently to expand the chest to the entrance of air. The respiratory and circulatory centres are so intimately associated and so thoroughly co-operative in their action that one of these vital functions cannot be seriously impaired without affecting the other. A sudden and decided reduction in arterial tension cannot occur without reducing in corresponding degree the respiratory capacity. Neither can the respiratory capacity be reduced to any serious extent without affecting arterial tension. I saw this peculiar phenomenon most clearly illustrated in the second case. If we desire to prevent untoward results in the administration of chloroform, we must watch with unrelenting vigilance the state of the two

great vital functions—circulation and respiration—and in case of collapse devote our attention assiduously not to one alone of the functions, but to both equally. A revival of arterial tension in the pulse indicates its revival in the brain, and a revival of respiratory action is almost certain to be followed by a restoration of arterial tension. When we have secured a state of unconsciousness and insensibility we have an infallible indication that the arterial tension of the brain is reduced to the point of safety. When we carry it still further and reduce the inspiratory capacity of the chest or act of respiration to two-thirds of the normal standard, we have an equally infallible sign that the arterial tension and circulation of the medulla are being reduced to a state of anæmia dangerous to life. But this wonderful property of chloroform to reduce arterial tension and circulation in the brain and spinal cord gives to it a decided advantage as a remedy in congestions and convulsive diseases of these organs.

The action of chloroform in active congestions and engorgements, violent convulsive movements, and maniacal excitement of the brain. I trust that I have been enabled to show you the wonderful power of chloroform to reduce not only arterial tension in the brain, but its power actually to reduce the circulating volume of blood in that organ. This must be regarded as a most important fact. We all know and appreciate the power of chloroform in violent convulsive affections with high arterial tension and an abnormal amount of blood in the brain. Nothing that we possess is capable of reducing arterial tension and cerebral congestion so speedily and easily. And I am impressed with the belief that in those cases of violent convulsive movement, maniacal excitement, high arterial excitement and congestion, there is no remedy whose action we can gauge so accurately as chloroform. If we find that the tension of the pulse is reduced 30 per cent., we may be certain that there has been a reduction in the arterial tension and circulation of the brain to that extent.

Many years ago, in a remarkable case of cerebral hemorrhage in the left hemisphere of the brain, resulting in paralysis

of the opposite side, congestion and finally inflammation of that hemisphere, with great restlessness and maniacal excitement, there was a high degree of arterial tension. But one of the most peculiar features of the case was an incessant involuntary rotary motion of the left arm that could not be controlled by the combined exertions of three or four men. In thirty minutes' time the free administration of chloroform would reduce this arterial tension 50 per cent., would arrest this rotary motion of the arm, and produce quiet sleep, indicating an equal reduction of arterial tension and circulation in the brain, and invariably, after recovering from the effects of chloroform, the patient would become more conscious, though he ultimately died of inflammatory softening.

It is thus clearly to be seen that in those cases of active delirium, maniacal excitement, or convulsive movement attending injuries of the brain, accompanied with a high arterial tension, symptoms of congestion and even inflammatory action, when such a pathological combination does occur, it is not only no bar to the administration of chloroform, but it is a condition actually favorable to its action. In congestion of the brain, whether traumatic or idiopathic, if coma is absent, if sensation is present, even if the patient is in a semi-conscious state, with active congestion, if necessary, chloroform is entirely admissible, as it will accomplish what depletion cannot do, and that is, to reduce the circulation of the brain.

Comparative action of chloroform and ether on the human brain. I think that there can be no doubt that the action of chloroform on the circulation of the brain differs materially from that of ether—that the one causes a state of positive reduction and consequent anæmia, and the other not only does not diminish the cerebral circulation, but, on the contrary, rather produces a venous plethora of the organ. From the effects of ether we never have that marked reduction in the arterial tension, that pallor of countenance, and ashy color of the lips, that we find in the anæsthesia of chloroform. On the contrary, under the influence of ether we often find the face deeply congested. While it is true that I have not seen

a brain exposed under the action of ether, as in the case of chloroform, yet all who habitually administer ether are aware of the fact that under its influence marked reduction of arterial tension is not a usual result. I believe that in this difference of physiological action of the two remedies lies the safety of ether over chloroform; that ether rarely, if ever, causes a dangerous degree of reduction of circulation in the brain and medulla. In cases attended with shock, with imperfect reaction, or great physical prostration, either from disease, constitutional or temporary causes, where a surgical operation becomes necessary and it becomes our duty to elect between the anæsthetic to be selected, I think the facts established by the history of the two cases reported would indicate clearly that, under such circumstances, ether is the appropriate anæsthetic. When the circulatory tension, whether general or cerebral, is low, I would hesitate in the use of chloroform. On the contrary, when the cerebral circulation is good, when the circulatory tension is not below par, chloroform is not only safe, but free from some of the dangers of ether.

Chloroform, from the beginning of its true anæsthetic action, is a depressant of the circulatory tension of the brain, and continues to reduce arterial circulation in the brain until, when the agent is pushed to extremes, there is absolute collapse of cerebral circulation. On the contrary, the primary effect of ether on the circulation of the brain is that of a direct stimulant, which finally results when profound anæsthesia takes place in a state of partial venous congestion of that organ similar to a state of profound alcoholism.

In using ether alone we do not hazard that extreme and dangerous reduction of the circulation of the brain and consequent anæmia that follow the indiscreet and careless use of chloroform as an anæsthetic.

If the conclusions arrived at from my observations on the action of chloroform on the human brain in the two cases reported be correct, and there can be no doubt of the facts elicited in these cases, then these facts go to prove that one of the chief, if not the chief, dangers in the use of chloroform is

extreme reduction in the circulation of the brain and medulla, and also that the susceptibility to the influence of this remedy differs widely in different individuals, so widely, indeed, that we cannot without experiment in any given case determine the degree of susceptibility. And furthermore, that the only true security in administering this agent consists in giving it in drop doses on a small pervious mask held over the nose and mouth, admitting sufficient atmospheric air for respiratory purposes.

In conclusion, I desire to state that after my first experience with my original case of injury of the brain in which chloroform was used, the history of which in condensed form was published in the October number of the *American Journal of the Medical Sciences* in the year 1860, I was so much impressed with the importance of the facts elicited by the action of chloroform in that case I was induced to collect all available information pertaining to this subject, with the view of preparing for publication at some future time a more elaborate paper on the action of chloroform on the human brain. The second case of injury of the brain which was adapted to the application of chloroform occurred in the year 1862, and has never been heretofore reported. This case very fortunately afforded me another and even better opportunity to test the effects of chloroform on the brain than the first.

While hoping to have other cases of the kind to add to the strength and interest of my report, no others of a similar kind and character to which chloroform was applicable have so far come under my observation. Of the two cases reported, very complete notes were taken soon after their occurrence, and these notes constitute the groundwork of the present paper.

DISCUSSION.

Dr. William E. Parker, of New Orleans, La.—This is too valuable a paper to pass without a very free discussion. Of all the articles that have been written on chloroform recently, I believe this is the one that is of the most value to us. The experi-

ments that have been made on animals with chloroform were of great value to us; but observations on the human subject are much more valuable. The action of chloroform on dogs does not tell us just how it acts on man. A large proportion of the dogs we put under chloroform die. That is not the case with human beings.

As to the general question of whether we should use chloroform or ether, I think we should not tie ourselves to either one, because I believe in some cases one is indicated where the other is not. I think we should use ether in all cases of weak heart, and chloroform in cases where the kidneys or the lungs are involved. The report of the Hyderabad Commission led us astray to a large extent. It has been my fortune to be present when three men died from chloroform, but never when I was giving it. Two cases occurred when I was an interne in the Charity Hospital. Two of these cases had been doing apparently well up to the stage of excitement. They struggled a good deal and died quickly. I believe these cases died from heart-failure.

In those cases where the heart fails the heart and respiration fail together, and I do not think a man is apt to breathe after his heart stops beating.

A third case occurred in the practice of Dr. Logan; I was present at the time and assisted him at the operation. The man who gave the anæsthetic told us the patient was not breathing. I put my hand on the pulse and found it was beating. For twenty-five minutes we worked hard on this case, but respiration had failed. The man did not breathe again, and died from respiratory failure. I believe the investigations of Hare and Wood, wherein they claim that death from chloroform is through heart or respiratory failure, are correct. The report of the Hyderabad Commission leads us astray. In each case, where the heart fails, the patient dies quickly. Unless we are sure of the man giving the anæsthetic we should use ether.

Dr. Herbert M. Nash, of Norfolk, Va.—I wish to say a word in regard to the administration of chloroform to a patient in a state of shock. Of course, it is generally taught that it is not wise to do so, but there is always, in my opinion, an element of pain that materially modifies that condition. I have seen men brought from the battle-field in a state of profound shock

from wounds by shot and shell. You could scarcely feel the pulse, and they were unconscious. Upon careful administration of chloroform the pulse would return, and it would bring them out of that state of shock.

Dr. George A. Baxter, of Chattanooga, Tenn.—Dr. Brown's observations are the most valuable I have known in this particular line. We very seldom have the opportunity of actual ocular demonstration of the action of chloroform on the human brain, and these observations, made with the care that this paper indicates that they were, are most marvellous in their fulness, in the closeness of their observation, and valuable in the results they have attained. But the results are not different from what we have been taught, except in one respect, viz., that the second stage of ether I have been taught is a comparatively long one, but one of excitement. The same with the second stage of chloroform, except it is very short and quickly passed over.

Now, it is a strange thing to me that, with the almost universal assertion that ether is so vastly more safe than chloroform, when questioned closely the majority of surgeons will indicate their constant and almost continuous use of chloroform. I have to confess to you that it has been my almost universal habit to use chloroform; the danger from it coming, as I believe, from what Dr. Price has repeatedly termed the water-logged condition; not in the administration of the chloroform proper, but in the over-quantity that is given. In addition to this, there are proper precautions to be taken beforehand—the use of whiskey and strychnine previously, and especially a delay for sufficient reaction from the condition of the shock. The use of a small quantity of morphine very frequently stimulates the heart, gives a better tone to the arterial centre, and overcomes the injurious effects of the small continuous quantity of chloroform necessarily given.

The question as to the relative merits of ether and chloroform is too broad to discuss, and yet it is my belief that we have never yet had proper statistics of the use of ether. The after-results of ether, where death has taken place, are put down to one cause or another, but not to the ether *per se*. Shock is used like malaria, as a blanket to cover our absolute want of knowledge of the actual cause of death. I believe, if accurate

statistics could be collected with reference to ether inhalation, it would do much toward diminishing the apparent difference in the danger between the two drugs. I have never had any difficulty with chloroform—never had a death. I have had cases where the respiration was suspended, and I have given chloroform in a case of double amputation of the legs, with the heart omitting every fourth beat. I believe a good deal depends upon the man who administers it, as well as upon the surgeon who prepares his patient for the use of it properly, rather than a difference in the two drugs.

As to the question of giving chloroform in shock, or ether in this condition, I can conceive that there may be no difference of opinion in this respect. When necessary for either to be administered, generally, of course, ether is preferable.

Dr. Joseph Price, of Philadelphia, Pa.—I shall have only a few words to say on this subject. I do not think we can easily settle the relative value of these two great remedies or anæsthetics. Some of the members lose sight of the fact that they are listening to a group of surgeons who used chloroform first in war and last in peace during a very extensive surgical experience. The gentleman who has just taken his seat has used it in cases of railway accidents necessitating double amputation. McGuire, second to none in this country, has also had an extensive and varied experience, and we are to look to such men for some precise knowledge on this subject, and no one else. Surely, it is not the physiologist who settles all things, nor the experimenter. We often look to them for precise knowledge, but they rarely give it to us. All things are usually settled by the clinicians—practical men.

The paper you have listened to is the result of practical observations by a man of extensive experience. He has carefully studied the action of the remedy or anæsthetic on the human brain, and has given us his results. I insist that we are to look to the surgeon, not to the experimenter, for precise knowledge. Too much prominence entirely has been given to the consideration of experimental contributions. For instance, Hare and Wood know very little about the practical use of anæsthetics. If some one dared to give a little chloroform in the midst of a trying or prolonged labor, both of them would probably leave

the room, fearing the patient might die. Such men would not stay and help you through. I am sorry they are not here, because I should speak of them just the same, and I dislike to talk behind their backs. If I dared to use chloroform and the case should terminate fatally, they would perhaps appear against me, and their books would be held up by some noisy lawyer as authorities on anæsthetics, and twelve men, perhaps without collars or neckties, would have to listen to the evidence and render a verdict.

Dr. Hunter McGuire, of Richmond, Va.—What Dr. Price has said strikes me forcibly. Clinicians find out things, and the physiologists or pathologists explain them afterward. So in surgery and medicine we sometimes stumble on facts. It is given to all of us to observe, but not to all to observe with the care and wonderful precision of Dr. Brown. I have listened to his paper with great interest. I remember thirty years ago, when I was a Confederate surgeon, that we inverted patients in cases of threatened chloroform-narcosis. Dr. Sims gave to Nélaton the credit of having discovered that inversion of the body and gravitation of the blood toward the brain in such cases would bring about resuscitation. It is said that one of his children was destroying mice by administering chloroform to the little animals. He picked a mouse up by the tail to carry it away after it was supposed to be dead, when it soon became alive again. This suggested to him inversion of the body in cases of chloroform-necrosis to prevent death. I know the old Confederate surgeons repeatedly resorted to this method for resuscitating people, but why, they did not know. It was done as a matter of course. Now, Dr. Brown explains it to us. An important lesson is also taught by this paper to the obstetrician of how chloroform acts in eclampsia. It is worth while to investigate it more in that direction. Indeed, there are a host of suggestions in the paper of Dr. Brown that we might study with profit. He told me about his investigations several years ago. I can only confirm what he has said by the little observation I have had, that chloroform does produce anæmia of the brain. I have seen it again and again in the operations I have done where cerebral structures were exposed.

Dr. John A. Wyeth, of New York City.—Three weeks ago

I operated upon a boy nine years of age for the removal of a cyst of the brain. I used chloroform. I removed a portion of the skull, opened the dura three-quarters of an inch along the fissure of Rolando, found the cyst, and removed it. I noticed exactly what Dr. Brown has narrated in that case. I have noticed the condition he speaks of in, I suppose, eight or nine cases of brain surgery, but have never had the sense to get up and say so. I have operated on twenty cases of brain surgery, and my experience confirms what he has said regarding the action of chloroform.

As to anæsthetics, I can say in a minute all I know about them. About five months ago I amputated the leg of a boy, and the house surgeon gave chloroform. Three days thereafter I took the dressing off and did not hesitate to tighten my silkworm-gut sutures. The boy was weak, and fourteen minims of chloroform, by measure, were poured on the Esmarch screen and the screen put over his face, the boy occupying the recumbent position in bed. The screen was taken off and ten minims more were poured on it, and the boy died. This was the third case of death from chloroform in a year in Mount Sinai Hospital. Two deaths from chloroform occurred in a similar manner in the polyclinic amphitheatre in one day. I have seen several deaths from chloroform which, I believe, occurred through failure of respiration or heart-failure. I do not want to be misunderstood as being so radically opposed to the use of chloroform as I was a number of years ago. An analysis of the urine should be made to know which anæsthetic is applicable to the case. If I have an alcoholic subject to deal with, I give chloroform, and if a patient has a limited respiratory area and weak heart, I give chloroform. In emergency cases it does not make any material difference to me. Where the lung and kidney are crippled and the patient is an alcoholic, I use ether. In children I use chloroform in great measure in almost all cases; but there are instances in children where I do not use it.

I stumbled on to a thing by accident the other day which I never intended to do. I cut down upon a man's larynx for the removal of an epithelioma. The patient could not take ether or chloroform, and was given one-quarter of a grain of morphine under the skin. I said to the old man I would remove the

growth, and he undertook to stand it. I immediately gave one-eighth of a grain of morphine more. I had a man to watch the respiration, who recorded it to me every two or three minutes. I worked at the throat to keep the blood out of his windpipe, and after an hour and three-quarters entirely removed the growth, cutting the trachea across, with morphine anæsthesia alone. The man laid there like a log of wood—never moved. I have done that operation three times since in the same way.

Dr. F. W. McRae, of Atlanta, Ga.—I desire only to relate an experience which I heard the elder Westmoreland recite frequently, and Dr. Wyeth's remarks recall it to my mind. A man who was addicted to the use of alcohol was given chloroform, and he died as soon as he took it. One of the recommendations Dr. Westmoreland always gave to his pupils was, never to give chloroform to a patient addicted to the use of alcohol.

Dr. McGuire.—Did you ever see a death from ether, Dr. Wyeth?

Dr. Wyeth.—Never saw a death from it in my life, but I have no doubt there are other complications.

Dr. Joseph Price.—While at home I use ether all the time, but my experience in the Northwest, through the far West and South, has been very satisfactory, notwithstanding the anæsthetizers have been strangers to me. Many of the operations have been done on the fly, and chloroform has been used in all cases, and I must say the results have been more satisfactory than at home. Beginning at Detroit with a group of operations, then going to Chicago, St. Louis, and through the Southwest to New Orleans, Kentucky, and the Southern States among strangers, with few exceptions chloroform was used and carefully, and I was surprised how nicely patients bore the operations and how quickly they came about free from shock, free from post-operative complications that I have been in the habit of worrying over at home. That experience away from home has been thrice more satisfactory than my knowledge of ether anæsthesia at home, where I had everything in my own hands.

Dr. C. Kollock, of Cheraw, S. C.—My experience with chloroform has been very satisfactory; not so with ether. The number of cases in which I have used it in my own operations and assisted other surgeons is not less than 10,000, and I have

never seen a death from chloroform yet. I have used ether and assisted others in using it about 200 times, and have seen two deaths. You may take that for what it is worth.

As regards the effects, I agree with some of the speakers that there is no shock from chloroform, but there is from ether. Chloroform is just as safe to use as ether if you exercise the proper precautions.

Dr. Wyeth.—The German Congress of Surgeons appointed an anæsthesia commission, and the commission have published their report of four years' investigation of chloroformists in Germany. The report appeared in a recent issue of the *Medical Record.* The exact figures I cannot give you. The cases were followed to their ultimate cause, and the deaths were about 1 in 2600 from chloroform, and 1 in from 12,000 to 14,000 under ether.

Dr. R. M. Cunningham, of Birmingham, Ala.—I desire to thank Dr. Brown for presenting this excellent and exceedingly valuable paper to us, and to record a death from chloroform at my hands. It was a case of acute tubercular peritonitis, with an extraordinary amount of hydro-peritoneum. The peritoneum was enormously distended; the patient had not been able to lie down for a couple of weeks. The operation, of course, was simply to open the abdomen and wash it out, and just as I took a scalpel in hand, after the anæsthetic had been given, the negro died. I immediately opened the abdomen in order to let out the extraordinary amount of water to facilitate artificial respiration, but we failed to bring him around. This is the only death during quite a large experience that I have had under chloroform anæsthesia. I want to state right here that most of the gentlemen who have discussed this subject have their own anæsthetizers—skilled men—both in the public hospitals and private infirmaries. A great many of us operate at the homes of our patients with almost any one we can get to administer the anæsthetic. My experience has been that with the use of the Esmarch inhaler we can give chloroform with greater safety than with any of the appliances in use for the administration of ether.

We have been told by abdominal surgeons never to tap an ovarian cyst prior to operation. I will state, however, that if I had to operate on an enormous ovarian cyst I would aspirate prior to the administration of the anæsthetic, for fear I would have a repetition of the experience I had in the case mentioned.

HYDRO-PYONEPHROSIS, WITH A CASE.

By Joseph Taber Johnson, M.D.,
Washington, D. C.

In the latter part of last April I was called to see General John B. Clark, of Missouri, in consultation with Drs. Peter and Sowers. The patient was found sitting in a large easy-chair, with a pulse of 120, a temperature of 102½°, and an enormously distended abdomen. He gave the following history: He was sixty-three years of age; had inherited and possessed until five years ago a remarkably good constitution; had been a General in the late war, and had undergone much fatigue, exposure, and privation; had slept in swamps, and lived at times on the shortest rations; his health, however, had remained good. For ten years after the war he was a Member of Congress, and for six years Clerk of the House of Representatives. He has since, and does now, occupy a prominent position under the government at Washington. About five years ago he first noticed evidence of failing health. A lump appeared in his right side, in the region of the liver, and was supposed up to the date of the operation to be caused by enlargement and abscess of that organ. This lump gradually increased in size, and the patient as gradually lost flesh and strength until the date of the removal of the lump, when he could not have weighed more than eighty pounds. At no time did he suffer from pain, and only a few weeks with fever. He was supposed at one time to have malaria; another, inflammation of the liver, and later on the diagnosis was hepatic abscess.

The tumor having acquired such dimensions as to make locomotion and the performance of official duties no longer endurable, General Clark was tapped on the 3d of last April, and about four gallons of ascitic-looking fluid were drawn off. The last part of

the fluid was stated to be brown or more chocolate colored, and was said to contain some pus.

The tumor rapidly refilled, and was tapped again in two weeks, when only one gallon of purulent-looking and bad-smelling fluid was drawn off.

The abdomen was not much reduced in size at the second tapping, and a third attempt was made shortly after this, but the fluid was too thick and putrid to run through the canula.

The General about this time began to have irregular chills, sweats, rapid pulse, and high fever, and it was determined, if possible, that a radical operation should be performed. At this point in his history I was requested to see the patient. His urine had been examined several times. The report had always been the same—"that whatever disease he had, his kidneys were all right," nothing ever having been found during these five years to indicate kidney trouble.

The diagnosis, in my mind, lay between hydatid cyst of the liver and hydronephrosis.

The patient was taken to Providence Hospital, and operated on the 9th of May last. A six-inch incision was made in the median line, as in ovariotomy. The cyst was found closely adherent to the abdominal wall. It was punctured at the upper angle of the wound, and between four and five gallons of most offensive gray pus drawn off. So offensive was this fluid that some of the physicians present climbed up to the upper seats of the amphitheatre and opened the windows. The cyst was thoroughly washed out with an antiseptic fluid before separating the adhesions; one plan had been to empty, disinfect the cyst, and pack it full of iodoform gauze. This was found to be impracticable, as it would have taken half a bushel to fill it.

The only course left was to enlarge the incision and enucleate the sac. When the adhesions had been sufficiently separated to pass the hand up to the liver, it was found to be perfectly healthy and in no way connected with the tumor.

The origin of the growth was then traced back to the right kidney. The only thing to do was a complete nephrectomy, which was accordingly done. Numerous adhesions were tied for fear of hemorrhage. The vessels in the pedicle were tied separately. The ureter was traced down very near the bladder,

tied, cut, and dropped. The entire tumor, fluid and solid, weighed about fifty pounds.

The abdominal cavity was then washed out and closed up in the usual way. A glass drainage-tube was left in. This was removed in twenty-four hours. The patient had a smooth and uneventful recovery. A curious feature about the case is the large amount of water excreted by the remaining kidney. Thus, on the first day, he passed twenty-four ounces; on the third and fourth, sixty-four ounces; and on the sixth day he passed six quarts. Soon after this it settled down to a normal quantity, and has since remained so.

I saw the patient last week, and he reports himself as feeling better than he had for ten years; he had gained over fifty pounds in weight, and was attending to his business without any difficulty.

There are several points of interest in this case—to wit, failure of a number of good men to make a diagnosis, though under observation for nearly five years; failure of repeated examinations of the urine to detect the slightest evidence of disease of the kidney—the only explanation the writer has to suggest is that the disease, at the time of analysis and subsequently, had so destroyed the function of the kidney as to prevent the escape of any urine at all, and that all the specimens examined came from the other organ, which, fortunately, was healthy; failure of such large quantities of foul-smelling pus to produce more sepsis; absence, all through the history, of pain or fever; the median-line incision; the separate ligation of the renal vessels; and the ligation and dropping of the ureter.

The writer is aware that the lumbar incision is preferred by nearly all nephrectomists, and that they often bring out the cut end of the ureter and fasten it in the incision.

While the lumbar incision may be best in small tumors and otherwise diseased kidneys, it certainly could not have succeeded in a case of the magnitude of the one just reported, not only on account of its great size, but also because of its being so extensively adherent to the omentum and abdominal

wall. The colon had to be carefully separated from the anterior surface of the tumor.

While this was a very large hydronephrosis, which, after the tapping, became a pyonephrosis, it was not so large by twenty-five pounds as one I removed for Dr. Bedford Brown in Alexandria, Va., which was mistaken by us all for an ovarian tumor. In that case the tumor weighed seventy-four pounds.

DISCUSSION.

Dr. Joseph Price, of Philadelphia.—General surgeons usually claim priority in this group of cases. I am very glad that gynecologists have taken the liberty to go higher up than the pelvis. The one point I would allude to in this valuable and instructive paper is one of special interest at present in connection with what is going on in Belgium and France, namely, how to deal with complications, reducing the size of tumors of any nature above the pelvic basin. The French and Belgians—I am at a loss to know what has become of their observations in dealing with suppurative forms of disease from above. Dr. Johnson has made an important point here in insisting that all such growths should be dealt with from above. I am satisfied nothing but disaster will follow the majority of cases operated upon by the posterior method. Through a procedure of that character you determine the precise nature of the complications and deal with them surgically from beginning to end, and you finish the operation at the nearest point of your incision, or near the spine. It is at this point that a definite pedicle is found in the removal of large tumors of this nature, liberating the omentum and small bowel, and possibly laying bare the large bowel, or opening the mesentery; dealing with the removal of such a tumor through the loin you remain in ignorance of the complications surrounding such a growth. All of these cases so operated upon have been successful. Both of your cases (referring to Dr. Johnson) of large tumors were successful?

Dr. Johnson.—No; the seventy-four pound one died.

Dr. Price.—I recently removed one, the woman having had her first attack of renal colic thirty-two years ago. She carried a stone for over thirty years. The tumor became enormous and was multicystic in nature. It was difficult to say positively that

it was renal, but I felt satisfied it was renal, as the history clearly indicated a growth from above. The tumor was of such long standing that she could not give me any definite knowledge on that point. I decided to make my incision above the umbilicus, which I did; extended it down to the ensiform cartilage and began my enucleation to find the pedicle near the spine. The enucleation extended from the anterior abdominal wall to the spine. I completed the operation thoroughly satisfactory to myself, and feeling that I had not overlooked anything. That is not so in dorsal operations. For all large renal tumors I would urge the anterior incision. For pyonephrosis and for suppurating growths of the kidney, of course, the dorsal incision is preferable; but to tap a growth of this kind through a posterior incision and do an enucleation blindly cannot but result in loss of patients that would otherwise be saved by the anterior method.

Dr. John D. S. Davis, of Birmingham, Ala.—Dr. Price has well said, "We are glad to see the gynecologists going up to the liver and kidney." I think in this case it is the kidney coming down to the gynecologist. The principal reason why the anterior median incision should be selected in these cases is this: It is sometimes the case that when you have a diseased kidney you have only one kidney, and the great advantage of this incision is, that you can make an examination to see if there is another kidney. The operation has been admirably described and the advantages of the anterior incision so ably dwelt upon by the essayist that I content myself by simply emphasizing the fact.

Dr. Price.—I omitted to call attention to one point. I would say, in this connection, that surgeons err often not only in the posterior but anterior incision. Only recently one of the best surgeons we have failed to recognize a congenital cystic kidney. The surgeon ought to make out a large congenital cystic kidney without opening the abdomen. It is a comparatively common accident to open the abdomen and remove the healthy kidney and leave the diseased one. That has occurred three times in Philadelphia in the last five years. The surgeon erred in his diagnosis, removing the active kidney. The patient died on the sixth day without secreting a drop of urine. If both kidneys are congenitally cystic, as they commonly are, they ought never to be touched. Before anything is done this should be determined.

MOVABLE KIDNEY.

By George Ben Johnston, M.D.,
Richmond, Va.

In the consideration of the subject I have chosen to present to you I wish to emphasize three propositions:

1. Movable kidney is extremely common.

2. It is capable of producing very distressing symptoms, and in many instances is a menace to life.

3. It is curable by a simple and safe operation.

My own experience with movable kidney from a surgical standpoint extends back a little more than three years. Prior to the first nephrorrhaphy, which I performed in May, 1891, those cases I met with were given little or no thought. Since the date mentioned I have looked with more interest on my cases, and have come to marvel at the frequency of the malady. I have examined a limited number of persons likely to be the subjects of movable kidneys since my first operation for its relief, and in a comparatively small number of subjects have encountered twenty-seven cases. Edebohls, who has studied five hundred cases, fixes the rate at one for every five or six women examined. Linder gives about the same rate. Osler gives no statistics, but mentions it as a common occurrence in his hospital wards. The records of these observers and my own cases justify the assertion that it is a common malady.

Causes. It is not surprising that we should so frequently find movable kidney when we reflect upon the *causes* which produce it.

It occurs more often in *women*. I have never seen one in

a male subject. *Age* is a factor in its production. My own cases have been in subjects varying in age from twenty to thirty-five years. In only one instance have I seen it in a woman over forty years. *Both* kidneys may be movable at the same time. The right is the one that is affected in the preponderating majority of the observed cases. This is accounted for by the *relation of the kidney to the liver* on this side. In women who wear corsets from early girlhood the lower segment of the chest is constricted in such a manner as to interfere with its expansion during the act of respiration. In the normal respiratory act unhampered by constricting corsets and bands, the contraction of the diaphragm tends to push the liver downward, while at the same time it is pitched forward. In the chest limited in its expansion this normal movement or rhythm of the liver is interrupted, and instead of pitching forward the direction is reversed, being downward and *backward.* This causes the thick posterior border of the liver to impinge upon the upper end of the kidney. The constant pounding of the heavy liver, repeated twenty-five thousand times every twenty-four hours, will in many instances dislodge the kidney from its bed. Even when only slightly loosened the concussion it sustains in walking, lifting, straining at stool, together with the continual hammering of the liver, will soon increase the displacement and cause a freely movable kidney.

The ease with which these cases produce movable kidney is much increased when from any cause there is a rapid absorption of the perirenal fat, such as occurs in wasting diseases. The absorption of the perirenal fat will of itself produce movable kidney.

Two anatomical facts help to explain the preponderance of *right* over *left* kidney displacement: (1) the greater length of the *right renal artery;* and (2) the *firmer attachments* of the left kidney. The reflections of the peritoneum from the spleen and the colon to the left kidney help to hold that organ in position.

I have twice seen a movable kidney follow obstruction of

the ureter. It happened that both of these cases were on the left side. The increased weight of the kidney, due to accumulated urine and congestion, must have played an important part in the etiology of the dislocation in these two cases.

SYMPTOMS. In many cases of movable kidney there are no symptoms. In others the symptoms are extremely distressing, producing great mental disquietude, as well as intense physical suffering. All neighboring organs may participate in these disturbances and cause a simulation of other disorders, chiefly such as come within the domain of the gynecologist.

The amount of pain and annoyance occasioned by movable kidney do not bear a direct relation to the degree of displacement. I have observed a number of cases of freely movable kidney in which the symptoms were trivial, while in others where the displacement was slight they were distressing. It seems that the symptoms increase in severity until the dislocation amounts to eight or ten centimetres, and when the displacement exceeds this distance many of the pronounced symptoms may abate.

The symptoms first observed are disturbance of the digestive apparatus or nervous system. Chronic gastro-intestinal catarrh is very commonly associated with it. Constipation, flatulence, indifferent appetite, eructations, colicky pains, and general abdominal discomfort accompany many cases. In not a few icterus is visible. The nervous symptoms arise from tension on the renal plexus of nerves, and this brings about epigastric pain, annoying and dragging sensations, palpitation, and a feeling of apprehension. All these symptoms are somewhat aggravated when the patient attempts to lie on the opposite side to that of the movable kidney. Uncommon exercise, mental anxiety, or fatigue intensify the symptoms, and will likely produce nausea and vomiting, tenderness of the abdomen, and pain quite like that of renal colic, all of which may persist for many hours after the exciting cause is removed. Menstruation invariably augments the disagreeable symptoms.

In a proportion of cases the symptoms are grave. Torsion of the ureter is common; partial occlusion by bending is not uncommon, inducing a distention of the pelvis by dammed-up urine. Hydronephrosis may follow. Calculus is thus invited by reason of poor drainage.

When a patient presenting any of the above-mentioned symptoms, particularly a female, presents himself or herself, a physical examination of the abdomen should be insisted upon. Indeed, so common is this affection that no examination of a woman suffering with continued abdominal and pelvic symptoms should be considered complete without palpation of the kidneys.

Diagnosis. While the symptoms already given may strongly point to a dislocated kidney, the diagnosis must depend upon finding the displaced organ by bimanual palpation. In the common run of patients it is a very easy matter to grasp the dislocated kidney between the opposing hands, one placed over the lumbar region and the other over the abdomen just beneath the free border of the ribs. The size, shape, density, and degree of movability will be readily perceived. A freely movable kidney when thus palpated will sometimes escape from between the fingers so readily as to produce the same sensation that one experiences when he shoots a wet seed from between his thumb and finger, and it may be so far removed from the position in which it was first found as to require a diligent search for its recovery. There are several acts and postures which may aid in engaging the kidney when attempted by bimanual manipulation: coughing or a deep inspiration will dislodge it when displaced upward and sheltered by the ribs; leaning forward when in the sitting posture will also bring it within reach. The knee-elbow posture will sometimes enable you to discover it.

Apart from tumors of the kidney itself, the condition most likely to be mistaken for movable kidney is distended gall-bladder. Only a few days ago I did a successful cholecyst-enterostomy for distended gall-bladder, in which case there was also a movable kidney. Thus we may have both condi-

tions present in the same subject. In differentiating a distended gall-bladder, the history, the usually anterior position of the tumor, the difference in the planes of attachments, the constant situation of the gall-bladder, and the variable situation of the kidney are sufficient to render the diagnosis comparatively easy.

New growths in the abdomen may be confounded with movable kidney. Here the character of the suffering, the cachexia, and often intestinal obstruction, together with the shape and density of these growths, are in sharp contrast to the history, symptoms, and mobility of the kidney. Repeated examinations and, if necessary, anæsthesia will enable one to establish the diagnosis in doubtful cases.

Operation. Nephrorrhaphy is not indicated in every case of dislocated kidney, but only in such cases as manifest distressing or dangerous symptoms. When gastro-intestinal disturbances impair the general health, when nervous symptoms are severe, when the dragging abdominal pains are constant, when disease of other organs is simulated, when hydronephrosis is threatened, when one or more attacks of torsion have occurred, the operation is imperative. The method I have settled upon, after a trial of several, is as follows: The subject is prepared as for abdominal section, purged with salts the day before, solid food withheld for two days preceding the operation, and the body cleansed with warm baths. On the evening before, the affected side and back are shaved and scrubbed with green soap and water and a wet pad of bichloride applied. This remains on until the patient is put upon the operating-table. This dressing is then removed, and a final washing is practised. The patient is placed in a semi-prone position, with a firm pillow or pad (preferably Edebohls') placed under the side, so as to render prominent the affected side, thus increasing the ilio-costal space. The incision is made commencing a half-inch below the twelfth rib and toward the outer edge of the erector spinæ muscle. This is carried in a slightly oblique downward and outward direction to near the crest of the ilium. The bleeding, which

is usually trifling, should be checked as it occurs by fine ligatures, so as to keep the wound clear of blood and unhampered by the presence of the forceps. When the cut has reached the edge of the quadratus lumborum, the aponeurotic extension of the transversalis is severed when the finger reaches into the renal space. The hand of an assistant presses the kidney from the front into its proper bed. The fatty capsule is torn through and the kidney exposed through its entire length. The kidney is carefully examined by both inspection and palpation. I have often, with perfect impunity, delivered the kidney through the abdominal wound, which enables me to palpate the pelvis and upper end of the ureter. The aseptic finger is made to sweep about the kidney gently for the purpose of slightly irritating and disturbing its fatty bed. This I deem important as conducing to a certain amount of exudation, which renders the subsequent adhesions stronger. The kidney is next placed as nearly as possible in its normal position, and a medium-sized suture in a curved needle, not a Hagedorn or one with severe cutting-edges, passed first through the deeper portion of the cut wall, then well into the substance of the kidney, and finally through the other side of the wound. The ends of this suture are intrusted to an assistant, who makes enough traction to keep the kidney in the position desired. The fibrous capsule is now split on the convex exposed border and the margins slightly turned back, making a long, narrow band of exposed kidney-substance. With fine silk and a small curved needle the reflected edges of the capsule are stitched to the deeper portion of the wound by interrupted sutures, usually four on a side. When these are snugly tied the larger suture, which should be placed nearer the upper than the lower end of the kidney, is tied. Great care must here be practised in order that there shall be no considerable pressure from this suture, the aim of which is to give support and more securely fix the position of the kidney during the healing process. All the sutures should now be closely cut. The upper portion and middle of the lumbar wound, particularly that part traversed by the suture

passing through the substance of the kidney, is closed by three or four deeply placed interrupted sutures. The lower half of the wound should be packed with strips of iodoform gauze, the packing to be fitted snugly to the exposed part of the kidney and to fill well the open wound. An ample dressing of iodoform or sterilized gauze is placed over this, a firm compress over the kidney to support it, and these held securely in position by a binder.

I have gone into great detail concerning the technique of the operation, because I believe that success requires an observance of such details. I wish particularly to insist upon the treatment of a part of the wound by the open method. This in my opinion adds much to the safety of the operation, as well as greatly enhances the result. The only case (my last) where I did not follow this plan of treatment gave me trouble by suppurating, and thus necessitated the reopening of the wound a week after the operation, and finally required packing.

The after-treatment is simple enough, the essential point being confinement in the bed on the back for four weeks, at the end of which time the adhesions are sufficiently firm to maintain the kidney in position.

In spite of my predilections for ether, I am in the habit of using chloroform in this operation for reasons which are obvious.

Case I.—Mrs. J. F. J., aged thirty-four years; twelve years married, no children. An invalid many years. Fell from a horse when a girl; later found a tumor in the right side; consulted a surgeon, who pronounced it an ovarian tumor. Gave iodide of potassium three years; this produced no change in the size of the tumor. Consulted me in March, 1891. Bimanual examination revealed a movable kidney of the right side. Symptoms distressing.

Operation May, 1891. Incision V-shaped. Treatment of kidney that indicated in the account of technique. She made a prompt and excellent recovery. I examined this case two years later, and found the kidney securely fixed.

Case II.—Mrs. A. E. J., aged thirty years; married, four children. She discovered four years ago a movable tumor in her right side. She consulted the same surgeon, who, as in Case I., diagnosed a tumor and prescribed iodide of potassium, and promised to operate when the tumor grew larger. The tumor did not grow larger. I saw her first in April, 1891. Bimanual manipulation revealed a freely movable kidney, capable of descending into the right iliac fossa. The principal symptoms in this case were intense nervousness, apprehension, and depression almost amounting to melancholia. She repeatedly told me she thought she was "crazy," and was wholly unfit for the performance of her domestic duties.

Operation was done in April, 1891, by the V-shaped incision. When the kidney was brought into the wound a cyst as large as a hen's egg was found on its convex border. This was amputated, and the raw surface sewed in the wound in the usual position. The recovery in this case was uninterrupted. The mental depression soon disappeared. She grew healthy and cheerful, and her general health rapidly improved. This patient became pregnant, and was delivered of a fine child on April 23, 1894. I attended her, and immediately after her delivery made an examination of the previously movable kidney, and found it firmly fixed.

Case III.—Mrs. W., aged thirty-four years; married, no children. Began to suffer from dyspepsia and nervousness after an attack of typhoid fever. Her health did not recuperate promptly, and she remained lean. She had dragging, gnawing pains in the abdomen. She discovered a lump in her side, and consulted me concerning it in June, 1891. Diagnosis, movable kidney.

Operation was done July, 1891. A single incision was made as described above, and the kidney anchored in the usual way. Ths recovery was prompt, her general health rapidly improved, and all the symptoms disappeared. This case remains cured.

Case IV.—Mrs. R., aged twenty-two years. Frail and delicate from girlhood. At the age of fourteen she was skipping a rope when she felt something give away in her side; she was never strong afterward. She became nervous and hysterical, and when her menses appeared a year later she suffered intensely. I saw her in October, 1891, and diagnosed movable kidney.

Operated November, 1891. Recovery satisfactory. In six months her general health was greatly improved and the dysmenorrhœa cured. She was examined two years later, when the kidney was found fixed and her health better.

CASE V.—Miss K., aged twenty-three years. Healthy as a girl. After lifting a heavy weight felt a pain in her left side. This gradually increased and became very distressing. Her health failed entirely, and she suffered much from digestive disorders and palpitation. She was treated for heart disease. I saw her in December, 1891. Diagnosed movable kidney, and did nephrorrhaphy in March, 1892. Recovered, with complete cessation of all symptoms. I examined her in July, 1894, and found the cure complete.

CASE VI.—Miss E., aged twenty-eight years. Slender and delicate as a girl. Health began to fail at twenty-two years. Took the rest-cure with some benefit. She consulted me in July for menstrual disturbances and severe nervousness. Examination discovered movable kidney on the right side.

Operation August, 1892. Gradual abatement of symptoms, and remains cured.

CASE VII.—Mrs. M., aged thirty-eight years; eight children. Found a lump in her right side. Consulted a physician in Baltimore, who pronounced it a distended gall-bladder. I saw her first in November, 1892. Diagnosed movable kidney. Her symptoms were distressing. Nephrorrhaphy, December, 1892. Recovery. Kidney remains fixed.

CASE VIII.—Miss L., aged twenty-six years. Healthy as a girl; was inclined to be stout; laced to reduce her waist. Began to suffer with dyspepsia and nervousness, and lost flesh. Symptoms increased in severity. She grew quite lean and feeble. Consulted me in December, 1892, when I diagnosed movable kidney and commencing hydro-nephrosis.

Operation December 1892. The kidney was much congested, and the pelvis distended. Restoration with fixation relieved all symptoms and restored her health.

CASE IX.—Mrs. H., aged forty-four years; three grown children. Health began to fail four years before consulting me. Diagnosis, left movable kidney.

Operation January, 1892. Health restored. Kidney remains fixed.

Case X.—Mrs. P., widow, aged thirty-one years; one child. Four years prior to this time she rode much on horseback on the advice of her physician, hoping to relieve chronic constipation, dysmenorrhœa, and nervousness. All of these symptoms were intensified. A tumor in the right side was discovered by the patient herself, and I was consulted. She was lean, with relaxed abdominal walls, and a diagnosis of right movable kidney was easily made.

Operation August, 1892. It is impossible to wish for a better result than was gotten in this case.

Case XI.—Miss R., aged twenty-six years. At the age of twenty-one years began to suffer with irregular menstruation and failing health. Had both local and general treatment without benefit. Consulted me in March, 1892; found movable kidney, and advised operation.

Operation April, 1892. Recovery complete, and great improvement of health.

Case XII.—Miss U., aged twenty-two years; healthy as a girl. Began to suffer with abdominal symptoms after an attack of malarial fever. Health became very poor. Frequent attacks of colic, intractable constipation, depression of spirits, and dragging pains in her right side. Examined and diagnosed movable kidney. Recommended nephrorrhaphy, which was done in May, 1892. Recovery complete; health excellent.

Case XIII.—Miss T. B., aged twenty-two years. A slender young woman, whose health had been poor for several years. I treated her for six months for gastro-intestinal catarrh and intense nervousness without benefit. At the end of this time I made an examination and found right movable kidney. Operated on her in October, 1893. Her recovery was prompt and complete; remains well and enjoys perfect health.

Case XIV.—Mrs. M., aged twenty-five years; one child. Consulted me in August, 1893, for what she thought was consumption. She had a cough and gastro-intestinal disturbances. Physical examination of the chest disclosed no disease there. The right kidney was freely movable. Nephrorrhaphy November, 1892. Cough disappeared and general health restored. Rapid increase in body-weight. The kidney remains fixed and her health excellent.

CASE XV.—Mrs. L. F. (N. C.), aged twenty-three years; two children. Consulted my friend, Dr. Long, for pelvic trouble. She had been an invalid for a year; the larger part of this time she spent in bed. She was markedly hysterical and despondent. Diagnosis, right movable kidney, endometritis, retroflexion and salpingitis of the left side. I operated on her in April, 1894. In this case I accidentally opened the peritoneum; the small cut was closed and no harm resulted.

She made a satisfactory recovery. Later Dr. Long curetted, removing the left tube and ovary, and stitched the fundus to the anterior abdominal wall at one sitting, from which she likewise recovered. Her health is much improved, but not vigorous as yet. Dr. Long examined her three months later, and reports great improvement in her symptoms. The kidney remains fixed.

CASE XVI.—Mrs. L. E., aged thirty-one years. Twice married; four children by first husband, none by second. I attended her in the first three labors, which were easy and natural. After her fourth labor her health began to fail; suffered dragging pains in the abdomen; had frequent and violent attacks of colic, and was exceedingly nervous. Resided nine months in Baltimore, and there in April, 1894, had a vaginal hysterectomy performed for what was said to be cancer of the uterus. In August of this year she consulted me for what she supposed to be an ovarian tumor. I found a freely movable right kidney. Attributed present symptoms to this, and advised operation in the fall.

Operation October 24th. Recovery from operation prompt. It is too early to say what the result will be.

CASE XVII.—Miss L. H., aged twenty-one years; delicate girl; suffered much at menstrual periods. Consulted Dr. Southgate Leigh, of Norfolk, in the summer of 1894. Movable right kidney was diagnosed. I saw her in September, and confirmed Dr. Leigh's diagnosis; also diagnosed renal calculus. Two weeks after I saw her she had an attack of renal colic and passed a gravel as large as a pea. Nephrorrhaphy October 27th. Delivered the kidney through the wound and critically explored the pelvis; found no other calculus; completed the operation by closing the external wound. This is the only case in which I

departed from the open method of treatment, and is the only one in which I had suppuration, and was obliged to reopen the wound. This case is still in the hospital, and is rapidly improving.

DISCUSSION.

Dr. John A. Wyeth, of New York.—I think this is a most remarkable collection of cases of operation upon movable kidney. The technique seems to me to be about perfect, but I do not altogether understand the necessity of slitting up the capsule in order to secure a double row of sutures, as it seems to me they might be inserted without that. However, it is evidently a successful procedure, and I shall be strongly tempted to try it.

In regard to closing the wound after the operation, or treating it by the open method, that also is a matter of choice, it seems to me. If there was a clean kidney, and the wound was kept clean throughout and clean silk used, and no source of infection beyond possibly a small puncture, I think I would prefer to close my wound, instituting a little safety-valve in the way of drainage, a catgut twist or piece of small absorbent gauze or small tube. For fear of some transudation of urine, or that some sepsis might occur, I prefer to close and unite the muscles to strengthen this part of the body. I do not know whether it comes within the scope of the paper or not, but those forms of kidney located deep down in the pelvis might be called movable. I have seen two cases of the kind, in one of which I assisted a friend, a very distinguished operator, who cut into it and thought it was a dermoid or something else. He lacerated the kidney and removed it. Fortunately it was one of a pair. It was one of those singular cases we sometimes unfortunately meet with. The other kidney was discovered and left in place in the pelvis.

Dr. John D. S. Davis, of Birmingham, Ala.—The paper to which we have just listened on movable kidney is certainly an interesting one, and the results are so perfect that it would be unreasonable to question the author's procedure. I do not know that I am prepared to accept the proposition made by the essayist as to movable kidney being as common as he says it is. I certainly do not believe that movable kidney occurs in one case out of every five. It is true we may have movable kidney that may

be so slight as to cause no disturbance whatever to the patient. A kidney that produces no trouble would hardly be observed, and we can only by post-mortem examination prove the proposition as to its occurrence in one case out of every five.

Now as to the second proposition, the extreme pain that accompanies movable kidney. It is apparent to us all that this proposition is erroneous, because one man or one woman in every five does not suffer from the kidney.

As to the third proposition, the comparative ease with which the essayist cures them, the only criticism I desire to offer is this: I cannot see why he leaves the wound open. It is an admission in this day of aseptic and antiseptic surgery of either imperfect surgery or infection through leakage from the kidney or ureter. The Doctor stated, in reading his paper, that in the examination of the bed of the kidney he used one finger, which admission, taken in connection with his technique, implies that his hands might be infected. It is true, we cannot make them absolutely aseptic, but sufficiently so in order that a wound of the nature of the one under consideration may be completely closed without getting suppuration afterward.

Dr. W. E. B. Davis, of Birmingham, Ala.—This subject is a very interesting one from several standpoints. I think the symptoms that frequently call our attention to movable kidney are found in the nervous system. The patient will have attacks of indigestion, a coated tongue, and a train of nervous symptoms that you get in a prolapsed ovary and retroverted uterus. In quite a number of cases in which I have thought, from the symptoms the patient gave me, that I would find a retroflexed uterus and prolapsed ovary, or perhaps an enlarged, inflamed ovary, I found a movable kidney. I am of the opinion that a great many cases of movable kidney are observed in the insane. Kidney disease has the same tendency to produce mental disturbance that ovarian disease has. I think by examining patients for movable kidney one finds more cases than those who are not on the lookout for them. Dr. Johnston looks carefully for movable kidney, and he frequently finds it. In some cases very few symptoms accompany this condition. A movable kidney may be the indirect cause of appendicitis by producing a catarrh of the large intestine which extends into the appendix. It may, perhaps,

also be the cause of gall-stones by producing a catarrh of the duodenum which extends into the common duct. In other words, the movable organ may produce a nervous condition which causes stomach and intestinal trouble.

Dr. Richard Douglas, of Nashville, Tenn.—It is necessary for us in discussing this subject to make a distinction between movable and floating kidney. If we have it pedunculated at one end, we call it a floating kidney, and a movable kidney where it is movable in its capsule. To give you some idea of the different views of observers, a Dutchman—whose name I cannot recall at present—has collected statistics, and out of six thousand women examined he found only one case of movable kidney on post-mortem examination. So there is quite a difference in the conclusions of various observers.

I am much obliged to Dr. Johnston for calling my attention to the frequency of movable kidney. When I return to Nashville I shall look for them, as I am a little short of pus-tubes, diseased ovaries, and ovarian cysts. I think, however, there is one fact that should be noted, viz., that the supposed duodenal and intestinal trouble we have in connection with displacement of the kidney does not amount to anything unless associated with absolute disorder of the urinary secretion, or unless we have at the time partial suppression of urinary secretion followed by the condition of polyuria afterward. If you have these two associated symptoms, one following the other, it is quite suggestive of movable kidney.

Dr. Herbert M. Nash, of Norfolk, Va.—I have seen a number of cases diagnosed as movable kidney. I know of three patients at home who have floating kidneys, and neither of these ladies has pain or trouble. One case is that of a lady very fond of dancing. In one case there was a stone passed about five years ago, since which time she has been comparatively well. I suggested operation in one case, but it was declined, and I believe the patient is perfectly well, because she has never said anything more about it. One of Dr. Johnston's cases I saw in consultation with a friend of mine, and suggested operation, believing that it was necessary. My patients, as a rule, have not suffered any considerable inconvenience from floating kidney.

Dr. W. L. Robinson, of Danville, Va.—I can add to Dr. Johnston's contribution three cases that I have known for years

and have not given any trouble. Recently I had one from North Carolina that was giving a good deal of disturbance. Until Dr. Johnston's report I thought Virginia kidneys did not give any trouble, but, like Dr. Douglas, I shall in the future hunt for them.

Dr. Joseph Price, of Philadelphia.—Dr. Johnston's paper is likely to stimulate and encourage the gynecological portion of the profession to be more diligent in the matter of searching for floating or movable kidneys in the future, and I am afraid that very few patients will escape having their abdomens opened after they get home. I am satisfied that if this discussion goes on and a few more are stimulated to renewed effort in the enthusiastic pursuit of sections or cœliotomies, that Dr. Johnston will probably apologize in closing the discussion. But what I have to say is this, that I am not slow in looking up sections myself, and I must say I have failed to find the right kidney so commonly. It is a curious yet interesting report from a very accurate observer, in that the cases have occurred on the right side, but two being on the left. This is the only report of this character of a long series of operations in which the trouble has really occurred on the left side. We all very well know that the right kidney is the lowest, and that it usually occurs on the right side. I do not look upon it as a deviation in some cases from the normal, and it is exceptional that you find it over the ileo-pectineal line or in the right iliac fossa. I am in the habit of beginning in the renal region with my two hands in examining these cases and coming down and finishing about the coccyx. I must say I have made a large number of examinations and have failed to find it so common. The occurrence of one in five is an error. Again, I must agree with our friend, Dr. Nash, who is also a careful observer and an active clinician, that prominent symptoms do not occur in all these cases. I saw a case in Virginia last Saturday, the wife of a physician, a rosy-cheeked woman, the mother of three children, very active, a society lady, who attends to her domestic duties as well, and never complains of the kidney. We cannot emphasize too strongly this point, for if the attention of women is once called to the slightest deviation from normal kidney, they will seek some one who will operate upon them. They will not be happy until it is done.

Dr. Johnston (closing the discussion).—I stated at the outset that I encountered, in all the examinations which I had made, only twenty-seven cases of movable kidney, and these varied in degree from very trifling displacement to great displacement. I quoted Edebohls, who, in a recent article on the subject, claims to have examined for gynecological purposes five hundred women, and of this number he found displacement of the kidneys in varying degree in ninety-six cases. Linder gives about the same statistics, but, of course, neither of these gentlemen would say that many women out of *every* hundred are subjects of movable kidney, but that is the proportion out of those who come for gynecological examination. I believe, if due attention is given to the subject, that the general surgeon will find nephrorrhaphy a means of relieving a great many distressing symptoms to which he now pays no attention, and that the operation is a very feasible one, capable of doing a great deal of good. My own experience in those cases I have operated upon has been most gratifying, and I have the gratitude to-day of those women upon whom I have operated for this malady. I have seen their health daily improve, growing more vigorous, and restored to usefulness and perfect health by an operation. I therefore expect to continue the practice in all cases which I deem proper ones.

As to the criticism which Dr. Davis makes concerning my reference to the aseptic finger, I desire to say that in this operation I practise precisely the same scrupulous care that I would in an abdominal section. My technique is as complete, I believe, as any technique could be. I prepare the patient with a great deal of care. My dressings are thorougly sterilized. The hands are washed with green soap for five or ten minutes before, then dipped in a permanganate solution, and then oxalic acid, and in turn washed with filtered sterilized water. Introducing the finger into the kidney bed, stirring up the bed in order to get a little more exudation than we would have is done for the purpose of securing firmer fixation. The result is better. I use the word aseptic advisedly, because I would hesitate to operate here with any less degree of care than I would in the abdominal cavity for many reasons. In the first place, I might encounter some accident, namely, open the peritoneal cavity. In the second place, I pass a suture through the kidney tissue, and this pro-

cedure calls for the utmost care. There is no danger of wounding the pelvis of the kidney or ureter, as Dr. Davis suggests, because the suture is placed too superficially for that. You ask why I treat the wound by the open method, and the answer is a simple one. I do it for the purpose of increasing the cicatricial tissue there. I want to get as much cicatricial tissue as possible to hold the kidney firmly in its place. In suturing I secure the fibrous capsule to the abdominal wall, passing the ligatures through the cut edge of the capsule. If this does not give me enough adhesions, then I would put in a silkworm-gut drain or small tube and close the wound directly, but I am not satisfied with the adhesions I get by that method of treatment. Therefore I pack the wound and require it to heal by granulation and get more cicatricial tissue, which better holds the kidney in position.

Dr. Wyeth asks, What is the use of splitting the capsule? Formerly operators failed in this operation because they sewed the fatty capsule into the wound. The splitting of the capsule, the sewing of the margins of the split capsule to the muscles, and the denudation of the kidney are all for the purpose of getting more cicatricial tissue. That is the object of the denudation, and is, I think, a sufficient reason for that method.

Dr. Douglas has referred to the differentiation between movable and floating kidney, and the infrequency with which it is found in the dissecting-room. A floating kidney is one in which there is a distinct meso-nephron; instead of lying behind the peritoneum it lies between the two folds of the peritoneum. I have never met such cases. I have encountered movable kidneys, but have never seen one with a distinct meso-nephron. I have seen one in which the kidney was covered by peritoneum both anteriorly and posteriorly, but no distinct meso-nephron.

I use the words movable, displaced, and dislocated kidney indifferently, and I think it makes no great difference whether we call it a movable, a dislocated, a displaced, or a floating kidney. It is a kidney which is out of its normal position, capable of producing a great deal of distress, and calling for an effort on the surgeon to relieve the symptoms.

ACUTE PERITONITIS.

By Richard Douglas, M.D.,
Nashville, Tenn.

The mass of confusing and contradictory literature that one encounters in the study of peritonitis renders the subject as difficult to treat from the essayist's standpoint as it is in the therapeutic sense. If one will take the trouble to analyze the hundreds of reported cases, and critically read the more pretentious articles, he must be impressed that as yet there is no very well-defined idea, no generally accepted teaching upon the nature of this affection. A prevailing fault with the general contributions to this subject is a failure to classify correctly the different forms of the disease. It is all-important to recognize the wide difference between localized infection, circumscribed area of inflammation, if you so choose to style it, and the contamination of the general peritoneal membrane with its necessary systemic intoxication.

In the short time allotted me I shall deal with acute peritonitis in its broadest sense. Tubercular peritonitis, chronic peritonitis in all of its forms, and localized peritonitis are not in any way referred to. In the report of cases which I append the character and extent of the pathology were determined by the disclosures of the operating-table. Nothing has been taken for granted.

Is it not now generally conceded that peritonitis in all of its protean types depends almost, if not entirely, upon microorganisms? There are those who believe in the idiopathic form of this affection. Conspicuous among them is Senn. I cannot presume to assert that the disease is absolutely an

entity of germ origin, yet such is my belief, founded upon close study of the researches of bacteriologists. All surgeons are willing to accept the infective origin of the disease in those cases occurring in the presence of a parietal wound or in the progress of a neighboring suppuration. There still remains a large number of cases dying of so-called idiopathic peritonitis, the true pathology of which we could not grasp until it became an established fact that germs did, under certain favorable circumstances, pass through the intestinal wall, and by their presence and action produce peritonitis. This was a decided advance, and before it vanished the material support of the adherents of the idiopathic idea. Cornil found bacteria actually in the substance of the wall of a partly necrosed intestine (Treves). In general septic peritonitis following intestinal wounds, perforating ulcer, etc., a special bacillus was found to be constantly present, the bacillus coli communis. It was known to inhabit the intestine under normal conditions, therefore its presence in the peritoneal effusion after intestinal perforation was considered of no etiological significance. Further study of peritoneal exudates demonstrated the existence of this bacillus in peritonitis not due to perforation. Its pathogenic significance was then deemed of more importance; and, finally, when this aërobic bacillus was actually discovered on its journey through the wall of a necrotic gut (Cornil and Treves) it at once assumed rank as a potent factor in the production of peritonitis. Observers were not slow to grasp the essential fact that so long as the intestinal tube remained in normal condition this bacterium showed no disposition to escape from its natural habitat, but when disordered circulation, strangulation, extreme distention, undue pressure, or mechanical injury impaired the integrity of the bowels and lowered tissue-resistance, a migratory spirit was at once incited in this bacterium. The behavior of this colon-bacillus of Escherich after it reaches the peritoneal cavity depends more upon the resistance there met with than upon any characteristic of the special germ. It is well known that these bacteria are facultative anaërobics, that they are pathogenic in char-

acter, having been found in man in a state of almost pure culture in the pus from an ischio-rectal abscess (Treves), and in a general sense they are pathogenic by reason of the toxic ptomaines produced by them and because of the local inflammatory process which they produce (Sternberg). They also do, perhaps, multiply in the blood, hence producing both septicæmia and toxæmia. The conditions under which the bacillus coli communis is found as the predominating organism are in all types of peritoneal inflammation of intestinal origin.

I cannot better illustrate my meaning than by borrowing from Mr. Treves Macaigni's table of thirty-five cases of peritonitis of intestinal origin in which the colon-bacillus was practically always present.

Macaigni's Table.

	Cases.
With troubles in the appendix	10
With typhoid fever	9
With ulcerative enteritis	6
With perforation	3
With cancer of colon	3
With hernia	2
With thrombosis of mesenteric vessels	1
With ulceration of the gall-bladder	1
Total	35

Appreciating the condition under which the colon-bacillus may escape from its natural habitat and become actively pathogenic, and knowing the supply is unlimited, the dose being governed alone by the integrity of the bowel, naturally we accord to this bacillus the first place in the causation of peritonitis. One can scarcely conceive of an intra-abdominal disease or injury that does not furnish the physico-chemical conditions essential to the action of this germ; yet, in according all proper distinction to this, we must not be unmindful, for clinical reasons, if for no other, that long before we were acquainted with the morphology of Escherich's organism, the potency of certain pyogenic bacteria of the streptococcus type had been demonstrated by Bumm, Fraenkel, and Renne, and their work corroborated by a host of followers. These or-

ganisms were always introduced from without, and their source could generally be ascertained, and, fortunately, the supply being often limited, the results were not so destructive. I would argue, however, the disturbance consequent upon the infection of the peritoneal envelope of the viscera establishes at once Grawitz's ideal condition of lessened tissue-resistance, which rallies to the field of battle the hitherto neutral colon-bacillus, so that in the shortest possible time your case becomes one of mixed infection, the toxic features being largely due to the intestinal organisms. Yet, in obedience to the teachings of experimental work, the surgeon must accept the classification of Pawlowski of two forms of peritonitis. First, that produced by chemical agents, with which we are not concerned. Second, that produced by infection. The latter is more tangible. It is fully in accord with our idea of the genesis of the disease. It harmonizes with our clinical work. With Mordecai Price I must agree, that every case of general peritonitis has a demonstrable cause, and that cause is septic in character. Pathological manifestations of peritoneal infection are subject to many variations, which, in a great measure, indicate the violence of the poison, and guide us in forming a prognosis; but to simplify matters we may consider it under two heads, which are fairly illustrative of the microscopic and macroscopic changes, the results of general peritonitis.

First, the peritonitis mykotica is, I take it, synonymous with the diffuse septic peritonitis of Mikulicz. This form of inflammation usually follows sudden outpouring of intestinal contents into the peritoneal cavity. Death is likely to occur at once from intoxication. If the cavity is examined, very slight changes will be remarked. A yellowish-green ichor may be the only manifestation. Should, however, the patient survive the onset, there quickly forms a sanguino-purulent fluid with but little tendency to fibrinous deposit. There is slight injection of the entire peritoneal membrane, no very gross changes.

The next type observed—the fibrino-purulent—is a much milder infection, slow in its onset, and with decided structural

changes. There is great congestion of the peritoneal membrane; flakes of fibrinous deposit are found throughout the peritoneum. A strong effort is made by nature to circumscribe by adhesions the infected areas, thus retarding the progress of the disease. Ultimately, however, the cause still acting, the adhesions yield, and general purulent peritonitis follows. To the inexperienced observer fibrino-purulent peritonitis appears by far the more malignant, when quite the reverse is true. The purulent exudate and fibrinous deposits are only evidences of nature's resistance. Clinically speaking, we are frequently forced to content ourselves with the surgical diagnosis of the secondary condition of peritonitis, relying upon the revelations of the operation to establish the true pathology. It is, however, an indisputable fact that the type and virulence of the inflammation are largely dependent upon the origin; hence, in our bedside work, we may consider the subject under the following etiological classification:

- Infection from without . .
  - Immediate — This is direct infection of the peritoneal membrane through penetrating wounds of the abdomen, either accidental or surgical.
  - Mediate . — This form embraces all cases of contamination of the peritoneum occurring from extension of adjacent infected areas, as leakage from mural abscesses, or puerperal infection.
- Infection from within . .
  - Immediate — Visceral perforation, or rupture, and direct inoculation of the peritoneal membrane with escaping contents, as in perforating typhoid or gastric ulcer, appendicitis, or rupture of gut or bladder.
  - Mediate . — Infection by emigration of micro-organisms through visceral wall of impaired resistance, as in incarcerated hernia, intestinal obstruction, ruptured ovarian cyst.

It is proper to refer here to those rare cases of peritonitis occurring with attacks of pneumonia, rheumatism, etc., but having no acquaintance with such types, and very seriously questioning their etiology, I will not devote further time to their consideration. In my abdominal work I have met with peritonitis sufficiently often to warrant a record of a brief summary of a few illustrative cases, the treatment employed, and the results, and endeavoring, as the cases are called, to assign them to their proper class.

Case I.—Mrs. K., aged twenty-four years, on April 28, 1893, was submitted to operation for supposed intra-peritoneal rupture of an octopic gestation. The clinical history and physical signs warranted the diagnosis. At the time of operation she was *in extremis;* temperature 99°; pulse 140, hurried; thoracic respiration; the face was dusky, cyanotic, features drawn; great anxiety and restlessness depicted in her countenance. Abdomen sensitive to hyperæsthesia, slight tympany. This condition of shock was attributed to hemorrhage, therefore operation was undertaken before thorough reaction was established. The cavity opened, a quantity, estimated as one quart, of brown sero-purulent effusion escaped. It was horribly offensive, and well it might be, for on examination it was found to contain fecal matter. The seeds of strawberries eaten two days before were scattered about within the peritoneal cavity. Not an adhesion was seen. The general contents were bathed with this septic material. Immediately search was made for the appendix. To my surprise, it was entirely gone, leaving a round ulcer the size of a dime, perforating the caput coli, through which escaped the intestinal contents. This escaping material entered directly the peritoneal cavity, contaminating everything. The edges of the ulcers were trimmed, and perforations carefully folded in and sutured. The cavity was thoroughly irrigated with gallons of hot water; the intestines and omentum were washed and ample drainage—glass tube and gauze—used. The operation was done in great haste, owing to the extreme condition of the patient. When taken off the table I feared she would not react. Under strychnine and other stimulants she revived, and the case progressed uneventfully until the third week, when symptoms of intestinal obstruction developed.

The cavity was promptly opened, and a coil of intestine was found twisted upon an adhesion. This was freed. The patient now went on to slow, but absolute, recovery, and she remains a perfectly well woman to-day, with none of those post-operative symptoms which are so likely to follow where there has been peritoneal inflammation.

Remarks. The operation in this case was undertaken upon an erroneous diagnosis. Not by way of excusing myself, but with the hope that it may be profitable to some, I will indicate the sources of error. A young healthy woman passed six weeks without menstruating; then irregular uterine hemorrhage appearing suddenly, and as quickly ceasing, only to reappear; paroxysmal, colicky pains in the lower abdomen; a swelling in the right broad ligament; sudden onset of abdominal symptoms, intense abdominal pain; a quick, soft, almost imperceptible pulse; rapid respiration; cold limbs; and extreme prostration were the misleading features that called forth the diagnosis of ruptured tubal pregnancy.

The etiology and pathology of this case assign it at once to the class of diffuse septic peritonitis. The infection was from within, of immediate intestinal origin. The perforation in the cæcum permitted the escape of contents of the gut directly into the cavity. *It certainly was diffuse septic peritonitis.* The dose of infection was so large, the toxæmia so profound, I mistook the shock it produced for hemorrhage. That it was general cannot be denied. Not an adhesion was found, yet this woman recovered. Mr. Treves says: "I am doubtful if a single human life has been saved by surgical interference in a genuine case of peritoneal toxæmia," and he is an honorable man and an indisputable authority. Will you gentlemen indicate my error. Am I improperly recording a case? I consider the recovery of this case to be due to three things: First, prompt operation. Second, multiple incision. Third, thorough irrigation and ample drainage.

Case II.—Miss R., prostitute, patient of Dr. James Stephens and Dr. Menees, of Nashville. Pyosalpinx following criminal

abortion. One of her physicians, while conducting an examination, ruptured the pyosalpinx. The patient appreciated the accident, and said something had burst within her. In twenty-four hours there were general symptoms of suppurative peritonitis. I urged operation, but it was declined. The patient appeared in fairly good condition, pulse well sustained, and temperature marking 100° and 101°. On the fourth day after the accident we obtained consent to operate. When the cavity was opened several pints of thick, purulent, but not offensive, fluid escaped. Strong adhesions bound coils of intestine in the pelvis together, yet these barriers had been broken down and septic matter had invaded the general surface of the peritoneum. Thorough irrigation and drainage constituted the treatment. Decided temporary improvement followed the operation, but she died at the end of the third day of septic intoxication.

Remarks. There is but little to remark upon this case, except to cite it as another illustration of the fatality of delay. Our experience teaches us all that temperature is no guide in peritonitis. Dalton, of St. Louis, has written at length upon this point. In this particular case, in the four days following rupture, the temperature remained under 101°, and the pulse of good volume, varying between 90 and 110. All of this with a belly full of pus and not one adhesion to fence it off. Does it show that certain individuals enjoy a comparative immunity? Or does it prove that the streptococcus pyogenes, the active micro-organism in puerperal infection, does not produce such violent systemic intoxication as the colon-bacillus? This case is one that should be classed as purulent peritonitis. Mediate infection from without through the genital tract.

Case III.—Miss W., patient of Dr. Swiney, of Gallatin, Tennessee. History of intestinal obstruction of six days' duration. When first seen by me she was *in extremis*, temperature 97°, pulse almost imperceptible, and too rapid to count. Appreciating the gravity of the case, and recognizing that her only hope lay in a surgical operation, I resolved to hazard the procedure. The cavity was quickly opened; there gushed forth a quantity

of pea-soup-like fluid, and coils of distended intestine bulged through the wounds. Seizing the presenting coil, it was drawn out and freely incised, thus relieving the gaseous and fluid distention. This wound was carefully closed, and now, with flaccid gut and empty cavity, I sought and found the source of trouble. It was a band of adhesion stretching from the omentum to the gut, under which had become ensnared several feet of small intestine. Flakes of fibrinous deposit were patched about the peritoneal surface. There was no matting of the intestine, nor effort on the part of nature to limit or circumscribe the inflammation. The cavity was thoroughly irrigated, a quantity of water left in, and drainage established. The condition of patient improved constantly during the operation. Her recovery was uneventful. Her subsequent history is one of perfect health.

Remarks. The recovery of this patient was a source of great gratification to me. It makes a striking reality of the metaphor "taken from the jaws of death." There is nothing unusual in the case. It merely furnishes an illustration of how a purulent peritonitis may develop by auto-infection through tissue of impaired resistance. The strangulated and distended gut was the medium through which the colon-bacillus passed. Fortunately her vital forces resisted the invasion, the plastic exudate marked the battle-ground; finally Nature succumbed to the functional disturbance and to the gradual dose of infection, and the patient was dying of exhaustion and toxæmia. Perhaps in this case it was not necessary to irrigate. Dry gauze might have cleansed just as thoroughly, so say some; I do not think so.

Case IV.—Mr. E. H. I found him lying in my office, bathed in cold perspiration, almost pulseless; short, shallow, respiration; cyanotic, screaming with intense abdominal pain. The muscles of the abdomen were as hard as a board and strongly retracted. McBurney's point was no more pronounced than any other point. From pain and shock he was slightly delirious, yet I elicited that he had had pain in the right inguinal region for two or three days, though not sufficient to confine him to his home. From this meagre history and the present condition of the patient, Dr.

Wilson and myself diagnosed perforated appendicitis. He was moved to his home. The intensity of the shock seemed so great I did not deem it wise to operate at once. I resorted to proper stimulation. That night at 11 o'clock, nine hours after the accident, his condition was considered suitable for operation. The usual lateral incision was made. On opening the peritoneum a little greenish-yellow fluid with fecal odor escaped. The appendix was found small, gangrenous, and perforated. This was removed and stitched over. The head of the colon was unhealthy, and a point of perforation just above the attachment of the appendix was found and closed. Believing the general cavity infected, a free incision in the median line was made for irrigation and drainage. The patient did well for twenty-four hours. Reaction was thorough. He died from septic peritonitis in fifty-six hours.

Remarks. The unfortunate issue in this case does not deprive it of its interest or lessen its teaching-value. You will please note that this gentleman, engaged in his daily occupation, was seized while walking along the street with violent abdominal pains, which proved to be due to the perforation in the cæcum at the base of the appendix. This in itself is worthy of record. Abdominal rigidity is incidentally alluded to by all as one of the phenomena of intra-abdominal trouble. In this robust, muscular patient the rigidity amounted to a clonic spasm of the abdominal muscles. These were absolutely so resisting that you could not depress them. They were so much retracted that they appeared to lie flat against the spine. There was also general abdominal hyperæsthesia. "This reflex nerve-phenomenon is due to the sudden impression made upon the nerve-centres within the belly, the solar, the cœliac, and superior mesenteric plexuses. And it is noteworthy that the contribution they receive from the spinal nerves is derived in whole, or in the greater part, from the lower seven dorsal nerves, the splanchnics" (Treves); and, as you are aware, these same dorsal nerves supply the integument and the muscles of the belly. This muscular rigidity is never seen in old chronic cases. It is only marked when a sudden impression is made

upon a peritoneum previously healthy. So says Treves, and it was certainly apropos to this case. The shock in this case was extreme. Certainly, so slight a lesion does not explain it. It is attributable to the quick absorption by the healthy peritoneum of the septic matter. This, and this alone, could produce such depression of the vital forces. The poison of the most venomous reptile could not have acted with greater rapidity and with more virulence. The operation was done as quickly as his condition would admit. Too soon to note any macroscopic changes except at the point of infection, but too late to save him from the deadly dose. This case should be classed as immediate infection from within, resulting in diffuse septic peritonitis.

Case V.—Master D., aged seven years, patient of Dr. Woodson, of Gallatin, Tennessee, for three days had suffered with symptoms of appendicitis. When I saw him his temperature was 99°, pulse 120. The general and local symptoms were those usual to this disease. I advised immediate operation; found seropus, a gangrenous appendix, and a free communication with the general cavity. No effort at adhesion. I carefully cleansed the part locally, left the incision wide open, packed with gauze, and did not irrigate. Patient died in forty-six hours with symptoms indicating septic peritonitis. No post-mortem.

Remarks. Without discussion we can assign this case to the category of immediate infection from within with the bacillus coli communis.

Case VI.—Mrs. H. Diagnosis of fibroid tumor with some acute complication, probably torsion of pedicle and consequent peritonitis. When the peritoneal sac was opened a quantity of sero-hemorrhagic fluid escaped. The tumor, larger than an adult's head, was black—almost gangrenous. It had rotated on its pedicle, completely strangulating circulation. There was no accessory adhesion for nutrition, hence death of the mass was inevitable. The parietal and visceral peritoneum throughout was of a deep-red color; flakes of fibrino-purulent material were

deposited here and there. Supra-vaginal hysterectomy, with ventral fixation of stump, irrigation, and drainage, completed the operation. Uninterrupted recovery. Unusual good health since.

REMARKS. This patient, although the subject of a large uterine fibroid, had enjoyed the most remarkable health. There was no insanity here, Dr. Price; no pus tubes; but the slender pedicle, in an unfortunate moment, became twisted. Sero-fibrinous peritonitis followed. In this, as in Case III., the germs of infection were invited by the favorable condition of the tissue.

CASE VII.—Mr. B., patient of Dr. T. G. Shannon. Taken with appendicitis Friday night at 5 o'clock. The case proved to be a very rapid one. I first saw him Sunday at 2 P.M. His rapid pulse, low temperature, greatly tympanitic abdomen, rigid muscles, thoracic respiration, hippocratic countenance, bore convincing evidence that perforation had occurred, and that he was laboring under the toxæmia of general peritonitis. Immediate operation was determined upon. The peritoneal cavity was found full of sero-purulent matter. There was no adhesion or fibrinous deposit; the septic material was generally disseminated throughout the cavity. Irrigation and multiple incision for drainage were employed. Patient did remarkably well until the end of the third day. He grew suddenly worse, abdomen became greatly distended, and he died with all the symptoms of sepsis.

REMARKS. I shall only remark upon this case to express the belief that I committed an error. Had I made multiple incision, after the method of Witzwell, had I incised the distended bowel, evacuated its contents, and irrigated the intestine, the efficiency of which procedure was accidentally discovered by Reibel in 1883, had I more thoroughly irrigated the general cavity, the patient's chances for recovery would have been greatly enhanced. He died of general purulent peritonitis produced by immediate infection from within.

CASE VIII.—Mr. S., a patient of Dr. W. G. Black. Eighteen months ago I operated on this man for appendicitis; found quite

a collection of pus and a rotten appendix. Ligated stump, but did not invert it into cæcum. The silk ligature came away, and the patient made a good recovery. August 31st he had a chill, followed by high temperature, excessive nausea, vomiting, and constipation. I saw him September 1st, at 11 P.M., and advised immediate operation. He refused to be moved to the hospital, and we decided to defer until the following morning. At that visit all symptoms appeared relieved, and we temporized. Wednesday, September 3d, while carefully examining the abdomen, using, I am sure, but little force, he complained of a sudden pain in his penis, and a great desire to pass his urine. The pain was intense. He quickly passed into a condition of extreme shock. His pulse became almost imperceptible. Thinking that rupture of the abscess into the bladder had occurred, a catheter was passed with negative result. He did not react from the shock for several hours. Indeed, so ill did he seem to be that I abandoned all thought of his reviving sufficiently to justify surgical interference. During Thursday, the 4th, his condition was very bad. Thursday night he rallied, his pulse became stronger, though the belly was still very tympanitic. He seemed to be in a fair condition the next morning, and operation was determined on. The stomach was well washed out before giving the anæsthetic as a preparatory measure. The abdomen was freely opened in the median line; a quantity of fetid purulent matter, at least a quart in quantity, gushed forth. It came from every part of the cavity, from diaphragm to Douglas's pouch. I washed and rewashed the intestines, especial care being given to the omentum; and, fearing insufficient irrigation, I made a second lateral incision at the site of the old operation, carried it well back so as to drain the lumbar region. Gallons of hot sterilized water were used in this cleansing process. Ineffectual search was made for the point of perforation. The old adhesions about the caput coli so fixed that gut that I could not discover exactly the source of the infection, and I must confess that I was not very diligent in my search. The condition of the cavity did not warrant hope of recovery. I completed the operation with the one idea that, if anything would purify him, he should die with clean insides. Free gauze drainage and the ordinary dressings finished the operation. There is nothing more to say. His bowels moved that night, and continued to act freely. He is well to-day, now ten weeks since the operation.

Remarks. I am quite well aware that the report of quarts of pus being evacuated from the peritoneal cavity will be accepted *cum grano salis.*[1] One of our distinguished Fellows is on record as skeptical upon this point, yet I aver that in this case the pus bathed every abdominal viscus; there were no adhesions except those remaining from preceding inflammation; perhaps the opponents of irrigation could have cleaned this cavity by dry mops. I did it effectually with water, and under similar circumstances should employ the same treatment with renewed confidence. The recovery of this case of general purulent peritonitis is due entirely to the free incisions, thorough irrigation, and ample drainage.

DISCUSSION.

Dr. Joseph Price, of Philadelphia.—Mr. President: As there does not seem to be any disposition on the part of the Fellows to discuss this paper, I will take the liberty of saying a few words. I regard Dr. Douglas's paper as one of great value, and I desire to express to him my personal appreciation for his excellent contribution. I have no doubt that there are a great many members in the room who will say that he is wrong in the position he has taken. I have reported such cases from time to time as he has narrated in his paper, and have been called a liar. I have seen cases in which there was a huge abscess, and the peritoneal cavity bathed with muddy fluid and lymph, and the patients have recovered after timely surgical interference. For reporting the results of such work I have received in return uncharitable and unprofessional comments and criticisms. No paper can possibly do more good than this particular one. It is the one subject to be settled in abdominal surgery, or in all surgery, for that matter. It makes very little difference to me whether you remove a fibroid of the uterus from above or below. I would do as I thought best. The question of how to deal with an ectopic gestation sac has been largely settled, but now it is peritonitis, how to recognize it, and how to treat it. Here, by the report of cases, Dr. Douglas has just about settled the ques-

[1] Dr. W. E. B. Davis is the member referred to.

tion which we have heard all over the country in regard to these cases. Treves says there is no treatment for it; that the patients all die. Bantock also says there is no treatment for it, and that they all die. It may be so with the cases that they have operated upon; but other surgeons have saved them, and they have no right to make such statements before such large medical gatherings in such a dogmatic way. Such assertions from such men simply put an end to all legitimate progress. At least half a dozen gentlemen present saw me, less than three weeks since, operate for acute general peritonitis, removing flakes of lymph on both sides of the bowel and mesentery, washing out the peritoneum with three or four pitchers of water, inserting a tube, and the patient got well. On the fourth day following the operation she was reading a French novel. In this case there were muddy fluid and a dusky hue of the viscera. Many of these cases recover when operated upon early. We commonly find the peritoneal cavity a huge abscess, charged with all sorts of filth; a generous toilet will save about 50 per cent. or more of these cases.

Dr. John D. S. Davis, of Birmingham, Ala.—In connection with this subject, I desire to say that I have had considerable experience with inflammation in the peritoneal cavity, and I cannot fully agree with what Dr. Price says, nor can I believe the essayist has cured general suppurative peritonitis. As to his first case, we can readily understand why he cured it. He operated on the patient before there was suppuration. There was no destruction of the endothelium when he washed out the peritoneal cavity and made a clean toilet; there were no adhesions and no anchoring of bowel. Had he waited longer in this case he would have had suppurative peritonitis, and then if he had washed out the peritoneal cavity the endothelium would have been destroyed, and death would have resulted.

With reference to the third case, in which the Doctor says he removed large flakes, he must have removed them from the colon. I saw my brother operate on a case that I recall at this time, and although he removed great flakes the case was not one of general suppurative peritonitis. Of course, he had suppuration, but it was a localized suppurative peritonitis, confined to a limited part of the abdomen and did not involve all of the small intestine.

Dr. A. M. Cartledge, of Louisville, Ky.—Peritonitis seems

to have passed from the domain of the physician into the hands of the surgeon, where, I think, it belongs, and it represents probably the most difficult of all abdominal conditions we are called upon to treat. I will say in the beginning that I was extremely interested in this paper, and I certainly think it is one of the best contributions I have ever heard on the subject. I think the classification of the Doctor is simply ideal. It simplifies the matter in a way not presented before. It covers the ground as far as the causative agent begins and attacks the structure.

The paper scantily referred to the pathogenesis of the disease. The Doctor said he did not introduce this into his paper on account of its great length. Had he dwelt upon this phase of the subject we would have been in a better position to discuss it. I, for one, believe as the essayist has stated, that the causative agent is a variety of micro-organism, and I think we look upon all these cases as essentially of bacterial origin. The variety of the micro-organism has much to do with the intensity of the disease. I think that some very excellent men who have devoted their attention to bacteriology in its relation to peritonitis are wrong in supposing that the causative agent is to be found in the colon-bacillus in all cases where infection takes place from within. We find most excellent authorities now advocating that doctrine. I think many such cases are due to rapid secondary infection. I think the plastic deposits we so often have are excited by the colon-bacillus in this form of immediate internal infection, and when they take on that active suppurative change which speedily follows it is from secondary infection, the organism of which was present, and follows immediately after the excitation produced by the colon-bacillus.

One word in regard to the disputed point of saving these cases. I want to say, Mr. President, I think the paper is none the less valuable because the deductions of the author seem to me a little wrong. I think the paper is extremely instructive. The Doctor, I think, referred in his paper to his treatment as being prophylactic, so far as the lives of many of the patients were concerned, and I want to say also that his treatment was prophylactic in three of the cases, so far as preventing peritonitis was concerned. In some of the cases described in the paper I feel sure that they would have died in twelve hours more if allowed to go on with-

out active interference, yet I think the courage of the Doctor, his acute surgical knowledge, his grasping the situation, came in nicely and were the means of saving the patients. I do not agree with him that active peritonitis had been established. I have repeatedly opened large appendicular abscesses, and the pus poured out in the peritoneal sac, but I have never lost one such case. I had pus everywhere, but not general peritonitis.

Dr. J. G. Earnest, of Atlanta, Ga.—I have no criticism to offer with reference to the excellent paper of Dr. Douglas, but I simply wish to cite one case which is of interest in this connection. About two years ago a healthy woman was confined at the end of the seventh month with her first child. The labor was easy and uneventful. Four days after she was taken with a chill in the night, with violent pain in the abdomen, followed the following day by high fever and the usual symptoms of peritonitis. I advised immediate operation, but it was refused for the time being, operation being postponed until the third day before they consented to it. I then operated and found in the pelvis every evidence of peritonitis. I searched and removed all the pus I could find. I examined the tubes, and they were healthy; washed out the abdomen with ten gallons of sterilized water as thoroughly as possible, and closed the abdomen after thoroughly drying it, without drainage. The temperature dropped down on the following day, and there was no fever. There was no fever for three days, and no chill afterward. At the end of the third day, however, there was a little rise of temperature, and it gradually went up until the fourth or fifth day after the operation, and finding her condition was getting worse I reopened the abdomen and found the peritonitis had entirely disappeared. No trace of pus. There was not the slightest evidence of there ever having been peritonitis. The patient died of sepsis about a week afterward. I believe if I had operated on her three days before I did, when I advised it, she would have lived.

Dr. W. E. B. Davis, of Birmingham, Ala.—I had the pleasure of looking over this paper before it was read, and was much pleased with the care with which it had been prepared. The essayist has reported a series of cases that are admirable and most excellent in their teaching. I believe that Dr. Price does not differentiate the peritonitis caused by gonorrhœa from peritonitis

produced by the bacillus coli and the staphylococcus and streptococcus. Gonorrhœal pus, as has been stated, is not so dangerous as other forms, and this should be borne in mind in the discussion of this subject. So in considering pus in the abdomen it is important to know what the character of the pus is in order to be governed in our prognosis of individual cases. The quality of the pus has much to do with what will be the outcome of the case. Many cases of septic peritonitis end in death before there is pus-formation. In many cases the infection is so profound that death results before there is much evidence of peritonitis. Others die in from twenty-four to forty-eight or seventy-two hours from hemorrhagic peritonitis—in other words, before the fluid has had time to become purulent. However, when life is prolonged until after seventy-two hours, and even sometimes after forty-eight hours, the blood in the cavity will have become purulent. The gravity of such a condition is apparent when it is considered that we are speaking of a general inflammation. The fact is, the great majority of cases of general peritonitis die before pus has had time to form. Hence when we hear cases reported where quarts and gallons of pus have been removed from the general cavity and recovery followed, we may conclude that the pus has usually resulted from a local collection which had ruptured into the cavity and the operation was performed before sufficient time had elapsed for this amount of pus to result from a septic inflammatory process in the general cavity. It has been pretty thoroughly demonstrated by experimental research as well as from clinical study, that "by the time a general peritonitis has become purulent there have resulted such destructive effects and such profound general infection that the patient cannot recover." We must appreciate the fact that if only a small portion of the abdomen is free the patient will be liable to get well. I have seen cases recover where two-thirds of the abdomen was full of pus. The first case Dr. Douglas reports is a very interesting one. He operated, as was pointed out, before he got purulent peritonitis. If there is one thing we have learned, it is the importance of operating upon gunshot-wounds of the abdomen early, before general peritonitis has had time to take place. If the surgeon is not allowed to operate until after twenty-four or forty-eight hours, his patient's chances are usually not very good, and he

should not operate without first emphasizing this point to the family. By doing so the probably bad result will not be attributed to surgery, and cases will be more liable to submit to operation early. Of course, death often follows these injuries not so much from the peritonitis as from the fact that a good deal of blood has been lost and the patient has been put in a bad condition to stand an operation. Hence a peritonitis of inconsiderable extent would produce death. What I desire to emphasize is that cases of septic peritonitis are not relieved by an operation where great quantities of pus are turned out of the abdomen, where the peritonitis is general and where it has gone through the different stages until pus has been formed. By that time the infection would be so great that the patient could not be cured even by relieving the peritonitis. In the language of another, "It is conceded that every septic peritonitis would become suppurative if time permitted; but, as a rule, death or a fatal condition results before the exudation becomes purulent."

Dr. George A. Baxter, of Chattanooga, Tenn.—I infer from what Dr. Davis has said that the pus in these cases of peritonitis under consideration is walled off from the peritoneal cavity, and remains indefinitely without producing injury to the patient. I know but one character of pus that can be walled off in any portion of the body and not do a great deal of harm; but the pus we get from the streptococcus, staphylococcus, or gonorrhœal pus, will invariably produce an acute, extensive inflammatory action when it comes in contact with a serous membrane, and in the peritoneum it means, if not relieved by surgical interference, death. It strikes me whatever the mortality may be in these cases of appendicitis or peritonitis, that there still remains, even in the case of extreme shock, one simple chance that the surgeon cannot rid himself of in his mind for the patient. It remains for him to give the patient every single time that one chance. Twenty-four hours would not keep me from operating upon a case of gunshot injury to the abdomen if there was any possibility of saving the patient's life. I would take the chances for my patient and trust to Providence to aid me in curing him.

Dr. R. M. Cunningham, of Birmingham, Ala.—I desire to make a few remarks on the non-operative side of this question.

I have seen, I presume, within the last ten years fully twenty cases of general septic, suppurative peritonitis in which no operation was performed, but in which a post-mortem was made in every instance. It does not matter so much whether the author of the paper or one that discusses it is general or specific in his remarks, provided he is an exception to my experience, and I would give to his opinion due weight. I want to say that the cases cited by Dr. Price and Dr. Douglas prove such marked exceptions to my experience that I feel like Dr. Baxter, that in every instance of septic, suppurative peritonitis I ought to open the abdomen, drain, and establish a thorough system of sewerage. I like that word, it is expressive.

Dr. Price's remarks are not general, but they are specific and definite, and I have dubbed him the Sam Jones of the Southern Surgical and Gynecological Association. I have, with a cotton sponge and with my finger-nail, cleaned away the products of inflammation that we found everywhere in the abdominal cavity. I have also passed my hand up between the liver and the diaphragm, and pulled out great wads of pus and lymph; but that was a dead man. The omentum in some of the cases has been greatly distended with pus, and if we wait for that condition it offers no prospect of recovery, and such patients are just as certain to die with operation as without it. There is no uncertainty about the fact that Dr. Douglas has saved four lives. Others might have gotten well. To have believed otherwise would be to believe in that doctrine of eternal predestination, that we are not born to die of septic peritonitis. I subscribe to the doctrine, that in cases of septic, suppurative, general peritonitis a hundred per cent. of them will die, and they do die.

In regard to all cases of general peritonitis being septic, I do not believe it. Some of the cases of peritonitis I have had have recovered—I do not mean those cases resulting in abscess, in a local circumscribed peritonitis. There is a general peritonitis which is non-septic, due to traumatism, and these cases get well under the treatment of putting the abdomen in splints, advocated by Dr. Clark. I have encountered this class of cases in the mines, the tram-cars running up against miners. I had one case in which a patient fell from the top of a car, was caught by the wheel, and, while locked with the brake, was pushed along on the

track some feet. The man had all the symptoms of general peritonitis, took from one to five grains of opium a day for several days, and got well. There is a tubercular peritonitis that is not septic, but all the laparotomies I have made of tubercular cases have been post-mortem. I have found the omentum rolled up and matted together by inflammation; the peritoneum as thick as your hand, covered over with lymph, yet patients have lived in that condition for weeks. That was not septic but general peritonitis. It is all over, from top to bottom, without exception. Again, I have made post-mortems where the entire abdominal cavity was obliterated, filled up with inflammatory products, the intestine running through in this way just like little tubes through a cake of tallow. It was an impossibility for the alimentary products to reach the receptaculum chyli, consequently they died from inanition. This is a common observation.

Dr. John A. Wyeth, of New York.—I want to say that it seems to me that if we had reached that perfection in surgical teaching, surgical diagnosis, and operative technique which we aspire to, this discussion would not have occurred.

At a recent meeting of the Academy of Medicine in New York City I read a paper in which I reported a large number of cases of appendicitis—about six hundred—the operations being done by men that I know, and the cases gotten from the men themselves, who were conscientious, good workers. One hundred and thirty-five cases of the disease were operated upon in the quiescent period—relapsing appendicitis—and the death-rate was two in one hundred. In all the cases of appendicitis I have ever seen, and they have not been a great many, but enough to justify an expression of opinion, not one of them has died when operated on within twenty-four hours after the diagnosis was made. The important thing for us is to find these cases out early, make the diagnosis, and operate upon them early, and we will save the establishment of the sewerage system referred to by preventing general peritonitis. This is the position I took a year and a half ago, and stood alone, and I was requested not to express such an opinion to the Society. I stated at that time that I did not care whether the members of the Society believed me or not, it was my honest conviction. Time would demonstrate it to be true. The conclusion then reached was that the safety

of surgery lay in the direction of early diagnosis and immediate operative interference. Of course, we cannot always get these cases sufficiently early to operate with successful results. Sometimes when we advise immediate operation it is declined. We should instil into the minds of the laity, when brought in contact with them, that they should submit themselves to surgical consultation when a suspicious lesion of the abdominal cavity is present.

Dr. W. L. Robinson, of Danville, Va.—This paper has been a very instructive one to me, and I am encouraged very much by the results. Certainly, whether suppurative peritonitis or not, we would have had death in these cases without operation. When suppurative peritonitis has engrafted itself so firmly there is very little hope unless an operation is resorted to. There are some who say that the abscess has just ruptured. How do you know it? How do you ever know it? Was not the patient *in extremis* when the operator performed his operation? Some three years ago, when Dr. Price was stopping at my house, I operated on a patient with a pulse of 140 and temperature of 104°, the pus welling up between my fingers. Whether you call it suppurative peritonitis or not, the woman was dying rapidly for want of operation. Style it what you please, she recovered. It seems to me, in these desperate cases, that a woman or a man, as the case may be, has a right to a chance for life. It is simply a question of moral cowardice on our part to refuse it. As honest surgeons it is our duty to operate in these cases.

In speaking of appendicitis, it is one of the most prevalent causes of peritonitis. A clean toilet is your only hope. Is there any combination of symptoms in appendicitis that will tell you until you enter the cavity whether you have got a perforation, or that septic peritonitis has set in? If that be true, then it is your duty to render aid at the earliest possible moment.

Dr. Joseph Price, of Philadelphia.—Some rather ingenious and dodging discussions have been made both by Drs. Davis and Cartledge, which clearly indicate that in our experience we differ very materially from time to time. Dr. John D. S. Davis has alluded to flexions, multiple in nature, plastic exudates, and effusions in the more advanced cases of peritonitis—something like the case mentioned by Dr. Cunningham—and these conditions are common, and the cases can be saved.

Dr. Senn alludes in his paper, published in the *American Journal of Obstetrics and Diseases of Women*, to one or two cases in which he failed to unravel the adherent viscera. Mark you, unravelling the viscera in the hands of a general surgeon, and a justly famous one. He should have unravelled these viscera at any cost. We should do it, and do it in the class of cases the Doctor alludes to, unravelling then from the ileo-cæcal valve to the stomach. You may open the abdomen from ensiform to pubes, having a view of the entire viscera, and with manipulation you fail to see the mesentery. Separating the small bowel you may see the mesentery on both sides in its entire length.

Only last summer, to fortify my statements, I operated on a woman, the operation being witnessed by Drs. Maury (of Memphis), Reed (of Cincinnati), and McMurtry (of Louisville), and requiring over an hour to sever the adhesions. This was a chronic case, not one which exactly belongs to this discussion, except primarily it must have been acute. The so-called plastic or acute cases are easy to handle. The viscera in these cases are slimy ; they double up in knots, in figures-of-8 or s's. In others the suppuration is very extensive. Separation of the bowel requires much time, and there may be free hemorrhage. We have a varied experience in dealing with intra-peritoneal inflammatory trouble of this character, and there is no disputing the fact that they get well in large numbers.

I have operated on two cases where criminal abortion had been produced. In one case there were knuckles of ileum in the pelvis and great quantities of muddy fluid found, the omentum to one side, club-shaped, not localized patches of peritonitis, but general. The woman got well and never appeared against the man.

Dr. W. E. B. Davis, of Birmingham, Ala.—I think we all agree that the form of peritonitis produced by stab and gunshot wounds, due to the bacillus coli, is invariably fatal. Now, Dr. Price, will you give us your results in operations for gunshot-wounds after twenty-four hours? Before that time patients can be saved, but what are your results after twenty-four hours?

Dr. Price.—My results have been quite satisfactory. In one case the coroner was notified to be at a post-mortem that was to be made, but the man recovered.

Dr. Rufus B. Hall, of Cincinnati, Ohio.—I want to compliment the essayist both upon his paper and upon the fact that he has the courage of his convictions, and is willing to do an operation that is just and right, even if the chances of his patient to get well are not the best.

The subject is so great for the time allotted to me in this discussion that I cannot dwell on all of the points and do justice to any of them.

In reference to the question as to which case should be operated upon and which should not, I think it is a very important question for us to consider. There are many things to be said upon either side of the question that will admit of debate, and there are good grounds for basing our argument on either side. It is a difficult question to settle—*when* and *when not* to operate in these cases. If a surgeon operates on some of these desperate cases, he is very apt to be censured by his fellow-practitioners. But let us bring these cases a little nearer home. Let us suppose it is my wife, or your brother, and what would you advise? If there was a possible chance of saving a life, I do not think any of you would hesitate to operate under like circumstances. I want to put myself on record as favoring operation in the class of cases reported by the essayist. The class of cases referred to here comes under the head of suppurative peritonitis. Whether or not they were really cases of suppurative peritonitis, it is a clinical fact that admits of demonstration, that when timely operation and drainage are resorted to these patients have a chance to get well, whereas, without operation, there is no man in the room but believes that such patients would have died. The essayist has saved fifty per cent. of the cases by operation. A more timid man, a man who hesitates as to whether suppurative peritonitis is present or not, would have lost them all. I think that we as surgeons have no right to take away the last chance for recovery. It is a desperate chance, the patient is willing to take it, and we operators ought to be willing to give it to him.

Dr. Francis S. Parker, of Charleston, S. C.—This discussion prompts me to ask two or three questions that I would like to have answered. In the first place, I would like to ask Dr. Davis, with whose remarks I have been very much pleased,

whether he would consider it bad surgery or not to perform a laparotomy after twenty-four hours on a patient who had been shot through the abdomen?

Dr. Davis.—The position I take is this, that these cases of gunshot-wounds ought to be operated upon as early as possible; but that if we operate on them after twenty-four hours we ought to be careful to explain to the family that it is a life-saving operation, and that we are more liable to lose than to save them. After twenty-four hours you may expect a large mortality, especially where the bowel has been perforated several times.

Dr. Parker.—You cannot tell whether it is perforated once or a dozen times. I have seen one man die of a single perforation, but it took more than twenty-four hours to produce peritonitis. If you cut in in such a case, and find one hole and sew it up, I believe you would save the patient.

Dr. Davis.—The dangerous form of peritonitis—suppurative general peritonitis—is the same that we get from gunshot-wounds, and if we get this form of the disease no sort of operation will save your patient. But there is no reason why you should not enter the cavity and try to save a patient's life. The question for discussion is, What can we do with suppurative peritonitis? not how to prevent it.

Dr. Parker.—Given a woman seven months gone in pregnancy, who receives a pistolshot a little below the umbilicus, and you see her twenty-four hours afterward: would you operate on that woman?

Dr. Davis.—Yes, after thoroughly explaining the case to the family.

Dr. Parker.—I would wait, for this reason: I know of a case of that sort; two months afterward the mother had a baby, and the ball was found in the femur of the fœtus.

Dr. Davis.—There is no harm in making an incision in such a case.

Dr. Parker.—Another question. Is it good surgery in typhoid fever, where you are reasonably certain that perforation has taken place, to open the abdomen and try to close the ulcer?

Dr. Davis.—I would not operate in such a case unless the patient was in very good condition and had not been greatly reduced by the fever.

Dr. R. M. Cunningham, of Birmingham, Ala.—I want to say that these cases nearly all die. There is simply no use in trying to treat them, but I do believe in giving them a chance. I think that if we can in any way isolate that portion of the bowel in which the perforation is located—which is generally in the vicinity of the ileo-cæcal valve—and wall it off from the peritoneal cavity, and trust to closing the fistula that will follow and get healthy tissue, there is a possibility of saving the patient. There is no use expecting a typhoid fever patient with perforation to get well. They will die. I desire to say, Mr. President, that if they ever get well I doubt my diagnosis. Where perforation of the gut has taken place, it is a matter of impossibility for such patients to get well.

Dr. Price.—In one of the early discussions of this subject Gross advocated early operation. He insisted in all walking cases of typhoid fever that he would close the perforation. If the general condition of the patient is good, I would advocate the open treatment or resection. You have two or three ulcers perforate in twenty-four or thirty-six hours. The only point Gross made was with reference to walking cases of typhoid fever. Surgery for perforating ulcers can be managed successfully. About all die without surgery; a good number should be saved by timely toilet. It is the discharge of bowel contents into the peritoneal cavity that kills quickly. Irrigation and drainage, closure of perforations, followed by bowel drainage or mild catharsis, have saved a few cases.

Dr. William E. Parker, of New Orleans, La.—I am sorry I did not hear the paper. I want to say a few words about what Dr. Davis has been speaking, namely, gunshot-wounds of the abdomen. My own results from laparotomies for gunshot-wounds, after a period longer than twenty-four hours, have not been good, but I was just thinking about this subject, and recall three cases that were admitted to the Charity Hospital of New Orleans for gunshot-wounds of the abdomen, two of which were operated on by the late Dr. Miles a year ago, and one by my colleague, Dr. Fortier, six weeks ago. In one of Dr. Miles's cases there were eleven perforations of the ileum, the operation being done thirty-six hours after the injury was received. The patient had peritonitis, his abdomen was opened and washed out well, and the

patient recovered. A second case with five perforations, operated on thirty hours after injury, got well. About six weeks ago Dr. Fortier operated on a patient in which there were two perforations of the ascending colon, twenty-four hours after the injury, and the patient recovered. The point I want to make is this—that if we have three cases in a hundred, or three cases in a thousand get well, I think it is our duty to give those three a chance for their lives. I think that laparotomy should be performed if the patient can stand it.

Dr. Douglas (closing the discussion).—I rise with a great deal of gratitude in my heart for the kind words that have been said to-night by the various members, and for the very courteous reception and liberal discussion of my paper.

Dr. John D. S. Davis made a remark which implied that I did not know the small intestine from the colon. There is just as much difference between the small intestine and the colon as there is between Dr. Wyeth and Dr. Kollock. This is only a pleasant criticism, gentlemen.

Why can we not have suppuration in twelve hours with flakes of pus, depending upon virulence or tissue-resistance? Flakes of pus scattered about over the intestine, pus in the abdominal cavity, means that Nature is making a fight. Patients do not die of inflammation. Inflammation is the warfare that is established against the enemy—the colon-bacillus. The flakes of pus are simply the remains, the evidences of battle. If it was not for inflammation, the population of the United States would be decimated in a short time. Without inflammation your lungs would go, there would be no end to septic infection. Inflammation limits it. It is the breastwork, and it is Nature's way of saving your patient.

THE HISTORY OF VAGINAL HYSTERECTOMY.

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The history of vaginal hysterectomy, this supposedly most recent of gynecological operations, takes us back fully one century, and is of peculiar interest, because every step in its development can be clearly traced, and because it reveals to us a soundness and broadness of medical thought and a perfection of gynecic surgery in the first decades of this century which is as instructive as it is surprising.

The discussions of that day in reference to carcinoma uteri cover much the same ground as that recently gone over, and the conclusions reached as to the relative value of high amputation and complete extirpation are the same as those now attained as the result of more general experience; *then*, the views were those of the advanced surgeon only; *now*, they are held by the profession at large. It shows us how useless a discovery is and how readily forgotten if not in line with the march of general progress and in keeping with the spirit of the period.

Not until the last decade has this operation become one of the accepted surgical procedures, and yet as long as three-fourths of a century ago it was successfully performed by the methods now in vogue and described with an accuracy and attention to detail now rarely found.

Some new procedures or discoveries are the results of inspiration or the product of independent thought, and others, as it is so strikingly instanced by this operation, are the culmination of a series of progressive steps, the natural sequence of gradual development.

In this case accident and ignorance paved the way ; the cutting off of the inverted and *prolapsed puerperal* uterus, under the supposition of its being a neoplasm of some kind, was the first step ; if this could be so easily accomplished, the *prolapsed cancerous* uterus could certainly be removed, and this was proposed (Wrisberg, 1787 ; Osiander, 1793), and at length accomplished (Osiander, 1801), by drawing down or artificially prolapsing the organ ; the uterus had now been successfully amputated above the seat of disease, and then, in a favorable case, complete prolapse, it was cut away, together with the appendages (Langenbeck 1813), leaving but a little of the fundus with its peritoneal covering ; it was but a trifling step further to total extirpation, and this soon followed (Sauter, 1822[1]) and *in situ*, but without the application of ligatures, which seemed an impossibility, yet was accomplished a few years later (Dubourg, 1829,) after bringing down the partially liberated organ, and this completed the last step in the perfection of vaginal hysterectomy.

The possibility of successful removal of the cancerous uterus *per vaginam* had been demonstrated, but "the opposition of a non-progressive and jealous profession, and of a public terrified at an undertaking so bold and new," prevailed, and the operation was forgotten, to be rediscovered in the new surgical era, a period better adapted to such incisive procedures.

The cutting off of a prolapsed puerperal uterus by the midwife was an accident repeatedly recorded in recent centuries and even in antiquity, but passed unheeded until the latter part of the last century, when detailed reports of such cases now and then appeared in the medical journals, notably the one related by Wrisberg (*Goettinger Gelehrter Anzeiger*, No. 81, p. 810). A midwife who had inverted and prolapsed the

[1] I cannot too warmly thank my good friends, Drs. E. S. Lewis, of New Orleans, and James R. Chadwick, of Boston, for having kindly placed in my hands the valuable publications of Dubourg aud Sauter, which have given me many pleasant hours and an impetus to further study in this direction, so that I am now in a position to present the historical features of this operation, the practical side of which I have endeavored to lay before the profession in my paper on " Vaginal Hysterectomy."

uterus in her efforts to drag out the placenta seized a bread-knife and cut off the bleeding tumor which protruded from the vagina, believing it to be a polypoid growth of some kind.

Wrisberg reasoned that if a prolapsed puerperal uterus could be removed without danger to life or injury to health, the prolapsed non-puerperal uterus could likewise be removed, and proposed amputation of the prolapsed cancerous uterus, but did not venture to carry out his suggestion.

Though it be true, as Baudelocque claims in 1803, that Lauvariol suggested the operation about 1783, or, as Lazari claims (*Medico-Chirurgical Journal*, of Parma, 1812), that the priority belongs to his countryman, Monteggio, it was the publication of Wrisberg which first bore fruit; inspired by his ideas, Osiander took up this line of thought in 1793, teaching the operation, which he for the first time actually performed in May, 1801, though he did not publish until his ninth successful case, in 1808, having in one instance performed the operation a second time upon the same patient on account of a recurrence after three years.

Attention was now directed to the subject of amputation or excision of the uterus—extirpation, as it was then called—and cases in point were more frequently recorded.

The midwife still continued her work, and in Siebold's *Lucina* (vol. i., No. 3, p. 401) we find the complete description of a case occurring in Switzerland, in which the attendants were surprised by the descent of a large tumor, and as it could not be removed by traction, the article states, "the boldest of the fool women present seized a razor and cut it off;" ice checked the hemorrhage, rest and nature completed the cure, which was perfect, only an incontinence of urine remaining.

Physicians taking note of the success of the procedure resorted to amputation where reposition was impossible, thus the case of Hunter in Duncan's *Annals of Medicine* (1799, vol. vi.), and of Joseph Clark (*Journal de Médecine*, 1805, vol. ix.); but as a method for the treatment of irreducible inversion amputation has not been revived, though recently

extirpation has again been advocated for the relief of prolapse.

As a surgical procedure for the removal of the cancerous uterus, the question was now before the medical world, and in 1810 the K. K. Academy of Vienna offered a prize for the most satisfactory solution of the problem, demanding an answer to a series of carefully prepared questions, thoroughly covering the subject of uterine cancer and its surgical treatment, which would do credit to any scientific body at the present day.

They may be well recalled as extremely suggestive even at the present time. The first two refer to malignant disease in any part of the body.

1. Under what conditions may we expect permanent relief from the removal of a malignant growth?

2. Is the removal of a malignant growth advisable even though a cure is not reasonably to be expected, and the general condition of the patient may even be aggravated?

3. Is the extirpation of the carcinomatous non-prolapsed uterus to be considered as one of the duties of the surgeon?

4. If so, what is the best method, how is it to be done, what special precautions are necessary, what are the dangers, and how are they to be guarded against?

5. What cases, considering location and extent of the disease, are to be operated upon?

6. Can a satisfactory diagnosis be made in the individual case as to the feasibility and successful issue of the operation?

7. Is the cure complete with the successful issue of the operation and healing of the incision, or are further therapeutic measures indicated?

The fact that the prolapsed puerperal uterus could be safely removed had been amply demonstrated, and Osiander had shown that the non-prolapsed uterus could be brought down within reach of the surgeon's knife and its cancerous portion removed, but would this secure against return of the disease? In case of a malignant growth in breast or testicle the entire organ was removed, and whilst it would appear that complete

extirpation of the cancerous uterus alone could secure immunity; but was this feasible, or even justifiable? The practical solution of the problem involved too serious, too desperate and novel an operation to be undertaken by even a bold surgeon without some justification, and this was given by the questions propounded by the Vienna Academy, a power in medicine.

Yet it was some time before the operator ventured beyond a high amputation; prolapse of the intestines, the opening of the abdominal cavity was feared, and stood in the way of complete removal.

Langenbeck (Langenbeck's *Neue Biblioth.*, 1813, ii. p. 672) approximated total extirpation in a favorable case, one of complete prolapse, removing the cancerous uterus and appendages by very high amputation, leaving merely a thin layer of uterine tissue underneath the peritoneal covering of the fundus.

The final step was taken by Sauter (Constanz, 1822), who successfully removed the entire organ *in situ* without the use of ligatures; the patient survived the operation, was relieved of suffering, and for a short time was able to do her own work, but died six months later, without any evidence of relapse, from indistinct bronchial and intestinal troubles.

Sauter published quite a little volume fully describing this case and seeking to answer the questions of the Vienna Academy. He shows that extirpation of the cancerous uterus is feasible, an operation which can be safely and successfully performed, and which the surgeon is in duty bound to resort to for the relief of suffering womankind. The method was practically the same as that now adopted, as near as it could be without speculum, ligature, or pressure-forceps, but knife and scissors were kept close to the uterus in order to avoid larger vessels. Loss of blood was slight, but one small vessel spurting, and this readily controlled by pressure with fingers; styptics, sponge, and lint for tamponade were on hand, but not needed; the uterus could not be drawn down, as the polypus-forceps would not hold in the friable tissue of the cancer-

ous cervix, so the organ was pressed down by the hand of an assistant, who also sought to press the intestine upward.

The reasons given for the operation and for every step in it are such as might be expected from the scientific surgeon of to-day: The sufferings of the patient were unbearable, she clamored for relief or death, but she was beyond help by medication, the knife alone was in question. Operation was still possible, because the infiltration did not extend to the vaginal walls or the ligaments and tissues surrounding the uterus; but the only operation so far performed, the so-called extirpation, the amputation of Osiander, would be useless, as the disease already extended beyond the cervix toward the fundus; removal of the entire organ afforded the only possible hope. Thus reasoned the brainy, high-minded village surgeon, and the wretched sufferer gratefully took the slender chances of the desperate operation he was willing to undertake for the first time. Though a cure was not effected, she was relieved from suffering, temporarily restored, and died an easier death, the probable result of an operation at so late a stage, when the cervix was already destroyed and the body of the uterus invaded; the operation was justified, if not absolutely indicated.

Sauter laments the impossibility of earlier operation, which he advocates, and laments and condemns the ignorance and narrow-mindedness of the "mere prescription-writing physician," who fails to recognize the disease and seeks cure by medication, until the condition of the patient is such that relief at any price is sought, but she is beyond the possibility of surgical help.

Have conditions changed much?

Sauter believes himself to be the first to have performed this operation, and so does Dubourg, who, in 1829, successfully removed the entire cancerous uterus at Auteuil, near Paris, and at a later date operated in New Orleans, as described in his little memoir on the *Extirpation of the Uterus* (New Orleans, 1846), a very thorough little work and remarkably like the preceding one of Sauter, covering the entire

ground, urging the operation as one from which the surgeon skilled in the use of the knife must not shrink.

The various steps of the operation are like unto those of the present, as we may see from his *résumé:* "First. An incision with the bistoury upon the tense vesical wall of the vagina. Second. A dissection around the neck with scissors for about one-half the circumference of the vagina. Third. The application of the double tenaculum to the fundus; the passing of the fingers to the rear and turning forward of the uterus, making it appear outside with its ligaments, then ligation and dissection complete the extraction, resting the entire uterus on the vulva; exploring the posterior wall of the vagina in order to remove a more or less large flap in accordance with the extent of the infiltration. Let me call especial attention to the manner in which he emphasizes this latter step, which he deems as important as the searching for each single glandule which may be found in the amputation of a cancerous breast. Other equally good points are made which have been looked upon as results of comparatively recent experience. So Sauter notes the disease of the kidneys caused by pressure upon the ureter, either by an enlarged uterus or a pelvic deposit, not as a contra-indication like other lesions of the kidney, but rather a point in favor of operation.

In 1829 extirpation of the cancerous uterus had been successfully performed in France and Germany, the method had been practically perfected, and these operations had been fully described in medical publications; but the era for such bold procedure had not yet come, the surgical mind was not yet prepared to grasp such apparent extremes, nor was the public prepared to accept such measures.

Dubourg, who tells us that in 1846, to his knowledge, the operation had been performed some thirty times, says that it has met with opposition "as malicious and false as that which was raised against Ambroise Paré and his ligation of arteries. The entire herd of medicos incrusted by routine, the mass of intriguers who speculate upon their science, sought to advertise themselves and to cast ignominy upon this great man;

and if Ambroise Paré, this physician of four Kings, was vilified for seeking to replace the cruel methods of checking hemorrhage, by burning the wound with red-hot iron or boiling wax, should he complain if he be persecuted for practising this noble operation?"

He truly says that it must be a cowardly surgeon who will listen to the cry of the public, who are unfit to judge, or to the malignity of his brethren, who are always ready to defame him. It can only be a surgeon who is a poor friend to his patient who will hesitate to aid woman to escape the horrible torments of that disease, by every means science can suggest, even at the risk of his own reputation; and he truly prophesies that in time the extirpation of the uterus will prove useful to a large class of invalids.

"When this operation," he adds, "appears less terrible it will be decided upon before woman is weakened by hemorrhages, by suffering, or cachexia; the chances will then be more favorable, by reason of a less vitiated constitution.

"It will be more useful when operative methods have been perfected, and we will operate with greater skill, because even the failures are instructive. The only real contra-indication is the cancerous cachexia or the ravages of disease upon the parts to be operated upon." Notwithstanding the success of isolated operators here and there, notwithstanding the success achieved by the now practically perfected operation, it fell into oblivion. It had been brought fairly and fully before the profession in all its phases, described in the lecture-room, in medical journals, in separate publications, and even in text-books.

E. Von Sieboldt's *Diseases of Women* (vol. iv. p. 500) describes the methods of Osiander—high amputation with cauterization, high amputation of the cervix, excision with packing of the cavity with styptics, and complete extirpation by vaginal hysterectomy. Yet this pioneer of the capital operations was doomed to oblivion; it was premature. Possibly it may have been public prejudice which swayed the surgeon, but certain it is that we hear nothing more of the

operation until revived after the undoubted success, and the acceptance by the public, of ovariotomy, which was actually a contemporary operation; vaginal hysterectomy the European, and ovariotomy the American sister. In their first years, during the first quarter of this century, the fate of both was the same. Both were too far in advance of their time; neither the profession nor the public were ripe for such procedures, to which we must be led by the slow process of progressive development.

Hysterectomy completely died out, whilst ovariotomy lingered along. Our own great McDowell battled in vain against the prejudices of the times, and in vain, as it seemed at the time, was his work which has since proved so great a boon to humanity.

The work of the Atlees saved ovariotomy from the death of its fellow, but no Atlee appeared for hysterectomy; none were bold enough to continue the work of hysterectomy in the face of the attacks made and the abuse heaped upon this operation as it was upon ovariotomy, be it by ignorance or jealousy on the part of the profession or by prejudice on the part of the public.

We must remember, too, that it was a brave woman only who would face the trials of this time-consuming operation without anæsthesia, and woman must be ever grateful to her brave sister of that day who for the first time faced this danger.

Ovariotomy, which had barely survived, not under the fostering care of the great hospitals and the teachers of surgery, but at the hands of the country surgeon, received a certain impetus with the discovery of anæsthesia, and was rapidly perfected with the advent of the antiseptic era. When this had been thoroughly established as an operative procedure, and its methods perfected, the surgical treatment of the diseased but non-enlarged ovary was the next step. Then the attention of the surgeon was directed to the uterus itself, and Freund's operation was the first step in this direction—the removal of the uterus, and, of course, by abdominal section,

which had proven so successful in operations upon the ovaries, but the results were almost invariably fatal. This was in the seventies, in the very home of Osiander, hardly more than one-half a century since the cancerous uterus had again and again been successfully removed *per vaginam*, whilst by the new method death was almost inevitable.

The work of Freund found imitators here and there, but almost always with the same result, and a lull followed.

Extirpation of the uterus by abdominal section was a failure, and the numerous fatal results caused a temporary halt; the attempt had been made in the wrong direction, under the impulse of the dominating idea of the period, the success of ovariotomy by abdominal incision.

Freund's operation is an admirable example of the prevalence of fashions, as it were, even in surgery. The removal of the ovary by laparotomy had proven unexpectedly successful, but as yet the knife had penetrated no farther into the abdominal cavity; it had not ventured beyond the ovary, and laparotomy was synonymous with ovariotomy. Ovariotomy led to hysterectomy. The success of abdominal surgery in operations on the one organ naturally promised well for the other, and not until continued fatal results had proven this method an impossibility was this line of attack abandoned; then we returned to follow in precisely the same course which had been taken fourscore years before; from the high amputation of Schröder to total extirpation was an easy step. Hysterectomy *per vaginam* was the natural sequence to the high amputation, and at once proved successful. Thus the operation had been rediscovered, as it were, or had been again reached in the natural sequence of surgical progress.

Again, in this reappearance of the operation we see the gradual development step by step; whilst in the earlier period extirpation had been more rapidly reached, through amputation of the prolapsed parturient uterus, the prolapsed and then the non-prolapsed cancerous organ, in the recent period of the reappearance of the operation amputation of the cervix, high amputation with conical excision, led to complete extir-

pation after the failure of the attempts induced by the prevailing interest in laparotomy. Freund's operation is a conclusive proof of how completely the work of earlier surgeons had been lost, and the fatal results of hysterectomy by this method would naturally suggest the thought whether many a life might not have been saved by a little research, whether untold anxiety and suffering on the part of the patient and worry and disappointment on the part of the physician would not have been prevented by a glance at the work of the previous generation, by the study of the surgery of earlier days.

Hysterectomy, with anæsthesia and antisepsis, with speculum and pressure-forceps, in this era of popular and successful surgery, was far more easy for the surgeon. And yet the new operation in the early eighties was of comparatively slow growth, because it was approached with some doubt by reason of the serious results which had followed extirpation of the uterus by abdominal section.

Comparatively favorable results, a comparatively low mortality, ere long firmly established vaginal hysterectomy as one of the accepted procedures in surgery for the removal of the cancerous uterus. The operation is not distinctly referable to any one surgeon, but seems to have gradually grown in the well-prepared soil, and certainly now it was timely and in proper season.

The only difference between the modern method and the old was the speculum and the ligature, which greatly facilitated the work of the surgeon, whilst antisepsis removed the most serious dangers and anæsthesia many difficulties; and now that extirpation of the cancerous uterus had been rendered a comparatively safe and simple procedure, it was Péan, its staunchest friend, who extended the vaginal method to other than malignant diseases.

The natural sequence was the application of the operation to other dangerous and incurable diseases confined to this organ, to benign neoplasms and inflammations, and within the last decade this operation has been developed and has attained a degree of perfection which is astonishing, even in view of

the triumphs accomplished by antiseptic surgery in all directions at the present day.[1]

Thus vaginal hysterectomy has been extended in its application from the removal of the cancerous uterus to the removal of the non-malignant, whether diseased or tumefied, organ, and this is the advance of the present over the past, but even this had been distinctly suggested; thus Sauter says that "the conditions which necessitate total extirpation are malignant disease and, perhaps, *other morbid conditions confined to the uterus*, localized and proven incurable, which cause great suffering or undermine health, if they *do not threaten* the life of the patient."

Though we have but little time and less leisure for historical research in this progressive and practical age, so firmly are we impressed with the pleasant sense of the superiority and perfection of this period, this little retrospect touches upon so much that is of interest that we may well give it a more than passing thought. First of all, we can trace the development of this operation step by step, with every link in the chain complete, clearly demonstrating the course of medical progress and throwing light upon seeming discoveries, the steps to which are less apparent.

Then, again, the development of this one operation is so fully portrayed that it presents among its many points of interest a comparison between the surgery and surgeons of the past and the present, between methods old and new, revealing striking contrasts and yet striking similes as well, notwithstanding the difference of conditions and circumstances in all phases of life. In fact, we find much that has recently been claimed as new discussed, if not practised, by the conscientious and observing surgeon of that day.

This operation was proposed at an early day (1793, 1787), and yet notwithstanding the clear demonstration of its feasi-

[1] I shall not here enter upon the various claims of priority for hysterectomy in connection with disease of the appendages, pelvic suppuration, and uterine fibroids. This pertains to the history of the day, to the surgery of this decade, and may be found in my paper on "Vaginal Hysterectomy for Suppurative Disease of the Appendages," Trans. Southern Surg. and Gyn. Soc., 1893.

bility, by the successful removal of the puerperal uterus, it was not attempted until years later (1801), nor was the pen rashly wielded.

Osiander did not publish until he had operated upon his ninth case, 1808, seven years after his first attempt. Langenbeck, who operated in 1813, did not publish until 1817; the same mature deliberation characterized the work of our own McDowell. Dubourg published in 1846, in New Orleans, his work in Auteuil of seventeen years before, though briefly described at the time.

The interesting little work of Sauter on *Complete Extirpation of the Carcinomatous Uterus* (Constanz, 1822), an admirable exponent of the best medical thought of that day, is dedicated to "the operating medico who has been and will yet be interested in hysterectomy, to Osiander and to woman and her heroism, the inspiration to this work."

He touches upon many points which we have looked upon as among the more important of recent acquisitions. He applies this operation not alone to cancer, but also to *other* not otherwise controllable diseases confined to the uterus which undermine the constitution of the patient; and in discussing the question of complete extirpation or high amputation as practised by Dupuytren and Osiander, he gives preference to extirpation because, as he rightly says, though the cancer may appear to be confined to the cervix, we cannot tell how far the infiltration has already extended, and he even believes total extirpation to be preferable to high amputation in the early period, when the cervix alone is involved, as there is less danger of hemorrhage and greater certainty of success. The main contra-indication is the evidence of cancerous infiltration in any of the tissues surrounding the uterus, be this ever so slight, then cachexia and serious lesions of any vital organ. But we must remember Sauter calls special attention to the fact that we must except certain renal lesions which are produced by pressure upon the ureter, and, on the contrary, call for the operation, which affords the only assurance of cure. He urges early operation, before the vitality of the patient

has been sapped and her recuperative power diminished, and loudly blames the mere "prescription-writing physician" for toying with medication and not heeding or not recognizing the deadly enemy until the sufferer is beyond the surgeon's help. Judicious observation is evidenced by Sauter's preference for total extirpation as more likely to remove every vestige of disease, and Dubourg's advice for complete removal of all visible infiltration in the uterus and about it as equally important with the removal of infiltrated glands in the operation for mammary cancer. If I have again recalled some of the views expressed, it is to emphasize the correct opinions held in those early days, opinions which were too far in advance of the general knowledge of that time, so that they were ignored and forgotten, to be again reached in the development of a more advanced era.

All the various methods of the present day for the drawing down of the uterus were resorted to: Osiander used the ligature passing through the uterine body, and when this tore out he used a calculus-forceps; the volsellum forceps were used by Dubourg; the toothed polypus-forceps by Wenzel; Struve even invented an instrument to be inserted into the uterine cavity for pulling down and controlling the position of the part.

Extirpation by the *combined vagino-abdominal method* was likewise proposed. Guterblatt (Sieboldt's *Obstetrical Journal*, vol. i., Part 2, p. 228) describes the opening of the abdomen and the liberation of the uterus from its connection from above by *cutting downward upon an instrument* devised by himself which was *inserted through the vagina*, and served to press up the parts and guide the knife, apparently identical with one of the new instruments of the present day, used in this supposedly new method of operation.

Even the erratic procedures of an ingenious operator whose method is scarcely believed a possibility by the wondering surgeons of this era of simple and rapid hæmostasis, vaginal extirpation without ligature or pressure-forceps, in fact sup-

posed to be a myth by many, is purely and simply the operation of 1822, a return to the early days.[1]

The operations were successful and remarkably well performed if we consider the exceedingly unfavorable conditions existing, a necessarily tardy operation, the patient weakened by suffering and discharge. Opinions were antagonistic, "the surgeon had to face the vigilant jealousy of his brethren and the curses of a justly terrified public," and the death of the patient was likely to be accounted murder; brave men they were who faced such dangers and sought to give relief in the far-advanced cases which alone came for operation. The prognosis is remarkable if we consider the period; the reasons given by Dubourg for operation are that the woman has no other resource and that she will sacrifice, to the hope of health and to relief from suffering, at worst only a very short period of a wretched life. Nor does Sauter expect more from operation in the advanced stage; he looks for the death of a patient at an earlier day than without extirpation, even though this prove successful, and she does not die on the table; he rightly believed that the brief span of life would be more bearable and death more rapid and easy. The technical difficulties of this operation were also much greater, without speculum or pressure-forceps, without anæsthesia or antisepsis. The parts were comparatively inaccessible unless drawn down, hence the ligature was rarely used. A tampon of lint or punk with styptics served to control hemorrhage, which never proved alarming.

Sauter used no ligature, the one essential point in which he is not up to date;[2] whilst Dubourg did not deem it essential, but

[1] March 16, 1895. This paper was written in the fall of 1894, before serious consideration had been given to the operation without ligature or pressure-forceps, and the possibility of such a procedure was doubted; but within the last months the "peeling out" of the uterus has been advocated in some of our journals, and this operation, once a necessity on account of a limited technique, is now placed before us as the most advanced of surgical procedures. The work of earlier surgeons seems to have been completely unknown or ignored, but these methods, highly creditable in the first quarter of the century, must now be termed bad surgery.

[2] March 16, 1895. This method, the peeling-out process, has been placed before the profession as the most recent modification of the operation.

applied it when necessary after the partial liberation and bringing down of the organ; in his first case one single vessel was tied; a great deal of blood was not lost in these extirpations of the uterus without the use of the ligature, the amount was estimated at from one-half to one and one-half pounds. The time occupied in the first operation of Sauter was forty-five minutes; but with this experience he believes that fifteen minutes will suffice for the next. Dubourg required twenty-five minutes, but a Spanish surgeon kept his patient on the table for three hours.

The discussions are much the same as those which we have passed through in the past decade before the complete acceptance of the operation. First came the question as to the advisability of the operation, under the theory that cancer was a constitutional, not a local, disease. Then as to the probability of a cure, even though all the diseased part be removed, and whether amputation or complete extirpation was preferable when the disease was limited to the lower part of the cervix.

The possible danger to the system from removal of the uterus is so well treated by Dubourg that I cite his own words. He says, "the uterus has neither organic value nor reaction before puberty nor after the change of life, which comes sooner or later; the operation brings it about immediately. A woman who has suffered extirpation of the uterus can be compared to one who has passed the menopause, because, in the first case she is deprived of the organ, in the second of its function only. In both cases her constitution no longer receives the stimulus, hence there is no contra-indication from any reaction which may be caused by the properties or influence of the uterus in a case in which the life of the woman is in question."

Prejudices and jealousies undoubtedly influenced many of the views expressed; Osiander was attacked on all sides; Wachter, a Dutch obstetrician, believes that Osiander's successful cases were not cancer but some benign neoplasm, whilst those which were malignant died rapidly after a more or less prolonged period of immunity.

Wenzel (1816), in his book on *Diseases of the Uterus*, believes that no good could come from the amputations of Osiander, as part of the infiltrated organ remains, and that patients so cured for a time die more rapidly after the inevitable reappearance of the disease. He says that complete extirpation alone can offer hopes of relief. In fact, various writers express the opinion that hysterectomy proper must be resorted to if any operation is to be attempted, whilst others claim that amputation may cure.

Dupuytren (*Bib. Méd.*, February, 1815) tells us that of his seven cases of amputation or extirpation of the neck, one has returned in eighteen months; one in two years; and another was well after four years; and this holds good at the present day for the average case which is already far advanced and in which extirpation is really indicated.

The numerous claims for priority are indicative of the imperfect dissemination of medical literature. Langenbeck, who first operated five years after the publication of Osiander, does not mention him with a word; Italians and French claim the operation as well as Germans; Baudelocque in 1803 expresses his doubts as to the method, and says that it was suggested twenty years before in the Chirurgical Academy by Lauvariol, and Lazari, in the *Medico-Chirurgical Journal* of Parma (1812), claims the priority of the suggestion for Monteggio.

Sauter says, and from all I can gather I believe this to be true, that he is the first who extirpated, completely removed, the cancerous uterus when not prolapsed (1822). This same claim is made by Dubourg for his operation performed in 1829, and it seems, justly as far as France is concerned, as the famous *Dictionary of Medicine* of Breschet (1822) says that this operation is impracticable and impossible. The public press and the medical journals of the country certainly give him the credit he claims, and the interest which his operation aroused may well be appreciated when I say that the secular press of the day proclaimed his success, a most unusual proceeding at that period.

It is unnecessary to cite the various opinions. The fact is

that the amputations of Osiander, the *extirpatio colli* of Dupuytren, had been fairly successful and had led to complete extirpation, as successfully performed and fully described in 1822, and some surgeons, though few they may be, occupied almost precisely the same ground which the advanced surgery of the present day has taken after the experience of the past decades. Sauter urges vaginal hysterectomy in cases of uterine cancer, unless the neighboring tissues, ligaments, or vaginal walls show evidences of infiltration, and such infiltration of the surrounding tissue he points out as the one contra-indication, in addition to cachexia and constitutional disease.

If the disease is limited to a small part of the organ, the indications for the operation are positive, he says; if it is more advanced, they are dubious; if extending to neighboring tissues, contra-indicated.

If the indication is a dubious one, it is the duty of the surgeon to operate, to give the patient the one chance for life. Amputation, he believes less certain, claiming that what is true of other organs is true of the uterus: that if any part is thus diseased it is better to remove the whole completely, and urges hysterectomy in place of amputation, even if the disease be limited to the lower part of the cervix, claiming that the danger is no greater, and the hemorrhage even less, in total extirpation than it is in partial amputation.

As to the malignant disease itself, he clearly expresses that view which now is most general, and upon this he bases his plea for early operation. He says: "It seems as if Nature for a time held the dread enemy imprisoned, to give us time to exterminate him ere he broke forth in every direction in his destructiveness. Death is certain without operation, and late operation useless."

So clearly and fully have the indications been given, so minutely has the operation been described, so fully discussed, and yet it fell upon barren soil. The spirit of the period was not sufficiently advanced, and complete oblivion followed.

With so thorough a preparation, so complete a paving of the way, that faulty and fatal misstep in the progress of

gynecological surgery, abdominal hysterectomy, might well have been avoided, had the authors and operators of earlier days received the attention which is due them.

DISCUSSION.

Dr. Rufus B. Hall, of Cincinnati, Ohio.—Mr. President I want to say a few words on this subject. I think the Society owes Dr. Engelmann a debt of gratitude for this very thorough historical sketch of this operation. The paper will forever set at rest the question of priority of vaginal extirpation of the uterus without ligature for cancer, for which there are being made such great claims of originality by one of our Northern surgeons, but which all thinking men know are unjust. The fact of the matter is that in the early operations for total extirpation of the uterus by the vagina the same object was in the mind of the operator without any question, and was then as now advocated that it can be done, must be done, and is done in favorable cases.

[Here Dr. Engelmann exhibited a speculum, based upon a French instrument and modified with a great deal of care by a young Brussels surgeon, which materially facilitates the performance of the vaginal operation.]

Dr. Ernest S. Lewis, of New Orleans, La.—I would like to correct a slight error made by Dr. Engelmann with regard to the locality in which this operation was first performed in France. It was not performed in Paris. The first operation of Dr. Dubourg was performed in the little town of Auteuil, in France, and an account of the operation was published in the local papers of that village, and the pamphlet from which the Doctor derived his information is in my possession. We have consulted one or two physicians residing in New Orleans, who substantiate the statement that Dr. Dubourg performed vaginal hysterectomy in 1839, and found it extremely difficult to obtain the assistance of any of his *confrères*. In New Orleans we have performed the operation a considerable number of times. I have performed it, I suppose, in the neighborhood of sixty times, but I do not perform it so often as I did. The results have been so unsatisfactory to me—I mean not immediate results,

for they are satisfactory; the patients get well, but they do not stay well. Unless these cases are seen in the initial stage of cancer, in my experience it is a most cruel deception, because you operate on a woman with cancer, she gets well apparently, goes home buoyed up with the hope that she is relieved, but in a few months, in the majority of instances, the disease returns, and I believe death is much more rapid. Therefore, I have in the past six or eight months thought seriously upon this subject of extirpation of the uterus for cancer. We know how prone it is to return when affecting some part of the body where we can see the whole surface and where we can get at the glands, and I cannot understand the published reports which I read of cases that have remained permanently well after five or six years with advanced cancer.

Many years ago I read with a great deal of interest some published accounts of cancer emanating from Brooklyn, in which the operation was performed by dissecting away or removing the diseased structure and as much of the healthy tissue as was possible with the subsequent cauterization with actual cautery or with chloride of zinc, as first recommended by Dr. Sims. I have operated on a large number of cases of that kind. These cases were published, and it was stated they recovered and for years after remained perfectly well. In a great many of such cases I have dissected out the whole uterus, leaving nothing but a shell. Some of my cases were published in the New Orleans *Medical and Surgical Journal* nine years ago, one of the few articles I have ever written and published, in which I cited fifteen or twenty cases where the whole uterus had been dissected out and nothing left but a shell. So much of the tissue of the fundus was dissected away in one place that with the act of respiration I could observe the ascent and descent of the fundus. I have obtained complete casts of the uterus in some cases, one of which I preserved for a long time. The percentage of recoveries is just as good as in the cases where we have totally extirpated the uterus. My first case was an accident. My intention was to have performed Schroeder's operation in a case of epithelioma of the cervix, but in making my dissection I accidentally opened the cul-de-sac in front, and finding I could tilt the uterus so readily forward, drew it down, and the ovaries and tubes coming

out at the same time, I completed the operation. It was purely accidental.

I would like to know the experience of the Fellows of this Association regarding the value of the operation of vaginal hysterectomy in advanced cancer as a means of cure.

Dr. George H. Noble, of Atlanta, Ga.—I think the error is not so much in the principles of the operation as it is in the application. In what little experience I have had in this particular line of work I find that less than 10 per cent., perhaps, of cases of cancer of the uterus are suitable for any sort of operation. I cannot see why malignancy in its incipiency should not be confined entirely to the uterus, and believe that in such cases this can be successfully eradicated by the knife. I think a great deal of the want of success is due to an error in the application of the operation to advanced cases of cancer, which should not be touched.

Dr. Joseph Taber Johnson, of Washington, D. C.—I did not have the pleasure of hearing this paper, although I am always glad to hear papers that are read by Dr. Engelmann. I am sure it must have been a good one.

The gentleman from New Orleans, who has just taken his seat, asked a question as to the ultimate cure of patients who have had the uterus extirpated for cancer. My own experience has been limited to fourteen cases. Two of these patients died of peritonitis. The other twelve lived for periods varying from eighteen months to five years. They are all dead now, so that I have nothing favorable to report of the ultimate cure from this operation for uterine cancer. It is quite possible that few of their lives were prolonged by the operation. Our lamented friend, Dr. A. Reeves Jackson, of Chicago, taught that this operation did not result in saving many years of life to cancer patients. A number of cases die as the immediate result of the operation, and in a large number the disease returns, so that we cannot sum up much or long saving of human life as a result of the operation. Those who are operated upon early and die as a result of operation would have lived two or three years anyway. I can say for those that lived two or three or four years after the operation, and finally died of a return of the disease, that their lingering lives were much more comfortable than those whom I had seen

die without an operation. The destructive process of the cancer destroys tissue, opens into the bladder, rectum, and the peritoneal cavity, and these patients emaciate and suffer, and finally die in great agony. I feel that even though they lived only two or three years after operation, still they were made much more comfortable, and their last months were not associated with foul discharges, horrible distress, and hemorrhages which accompany this destructive process unrelieved by operative interference.

Dr. Rufus B. Hall, of Cincinnati, Ohio.—In answer to the question of the gentleman from New Orleans (Dr. Lewis)—I think it is a very important one—a question that will not be settled very soon, that is, in sustaining the operation with the idea of permanently curing these patients; but whether or not the operation is a justifiable one, it depends on what we hope to gain, or what we hope to do for the patient for her comfort while she may live. I want to place myself on record as indorsing the operation for total extirpation of the cancerous uterus in properly selected cases, and against the operation in the advanced stage of the disease; in other words, I do not believe it is advisable to make total extirpation in every case of cancerous uterus in which the uterus can be removed. Some operators make that as the dividing-line. I think, to give the patient any kind of a chance for comfort for a few years, the operation must be made early. I have made the operation a number of times. I have at least eight or ten patients on whom I have operated and have gone along two years or more without any return of the disease.

One has gone along nearly four years, and I am reminded that in this particular case I tried to back out of the operation because the disease was too far advanced. I felt the disease would return in a few months. I saw the patient within the last two weeks; did not examine her, but she says she is thoroughly well. I examined her four months ago, and there was no indication of cancer in any part of the body from her appearance. A pathologist after examining this specimen said it was cancer. The cervix was almost entirely destroyed, simply leaving just a little rim next to the vaginal mucous membrane. Why in this case the disease has not returned I am unable to say; but I think we are justified in making the operation, simply for the comfort we can give these patients while they live, even if the disease returns

in all cases and eventually kills the patient, for the reasons pointed out by the last speaker. They die a slow, lingering death without operation. Some of them, I have no doubt, suffer just as much pain where the disease recurs, but their illness is of shorter duration, and they do not have the filthy discharge, the opening into the rectum and bladder making their condition so difficult and hard for the nurses and friends. If we can see the cases early enough, and a certain number of them are cured, we have a still greater incentive for operation.

Dr. J. G. Earnest, of Atlanta, Ga.—There is one class of cases of cancer of the womb where there is no question that the procedure of total extirpation is the only operation, and should always be done—that is, in cancer of the body of the womb. It strikes me, the matter of operation in all cases of cancer of the cervix is just simply a matter of judgment in each case. If the operator thinks it is possible to remove the entire diseased structure, it is clearly his duty to operate, and since the statistics in favor of this operation are good, the cases very rarely dying from hysterectomy, it strikes me with equal force that it is better to try to rid the patient of the entire disease than to resort to a modification of this operation for removing the diseased tissue.

Dr. Engelmann (closing the discussion).—The discussion which has followed my paper has been most interesting to me, and is another proof of the sound opinions of the old surgeons I referred to; it is precisely on the basis of articles written and opinions expressed in 1810 and thereabouts. Quite a number of surgeons claimed that the successful results of these removals of cancerous uteri were doubtful, precisely in the sense in which Dr. Hall has spoken. I said that the operation had been performed in Paris, but it was in one of the little suburbs—Auteuil, as Dr. Lewis says—and the pamphlet of which I spoke, kindly loaned to me by Dr. Lewis, has been the source of a most interesting investigation, to me at least, and I thank him again. I will add my testimony to that of others, although it is not exactly to the point in a discussion of this paper. My own experience has been precisely that of the gentlemen who have spoken, so much so that I have not cared to publish my cases of removal of the cancerous uterus. It is true the patients were well for a time, but sooner or later they suffered from a return of the disease. But much good is done, as after operation relief comes,

and then death, without prolonged misery. It is a more rapid and more cleanly death, and for this reason and the comfort and relief from pain enjoyed by the patient it is right to perform the operation, but we must not hold out the promise of life and complete eradication of the cancerous disease.

In this connection I will show some labels for our jars of antiseptics. The ordinary outside labels are liable to be affected, washed off, or effaced by the fluids, but this label in a glass tube is put into the bottle, is not disturbed, and can always be changed. The label is prepared and devised by a St. Louis house, and I think this little device so useful that I wish you to see it.

A CASE OF CARCINOMA OF THE PARTURIENT UTERUS REMOVED THREE DAYS AFTER CONFINEMENT; RECOVERY.

By George H. Noble, M.D.,
Atlanta, Ga.

This specimen is one of carcinoma of the parturient uterus removed by vaginal hysterectomy three days after labor. This woman had previously been confined, sustaining a laceration of the cervix uteri, which, perhaps, was a factor in the cause of the disease.

In the first few months of the last pregnancy she was treated locally by her family physician; but there was nothing, I am told, to cause a suspicion of malignancy. The treatment was suspended when quickening became perceptible, but it was soon followed by offensive watery discharges admixed with pus and blood.

Dr. W. B. Parks, who was attending her at that time, recognized the character of the case, and asked me to see her on June 4, 1894. He stated that she had been in labor for some time before he saw her, altogether a little more than twenty-four hours. She was very much exhausted; pulse 135 per minute, very weak and compressible, with marked anæmia; the temperature 102°. The history gave a clear evidence of repeated chills or rigors, with varying temperature and excessive diaphoresis for three months past, and in that time she was markedly reduced in flesh and strength.

Almost the entire vaginal portion of the cervix was destroyed, less than one-fourth of its circumference remaining intact. The induration extended deep into the uterine tissue, but could not be felt beyond the limits of that organ. The roughened, ulcerated surface was easily traced for a considerable distance within

the cervix, the os being dilated to about five centimetres in diameter. Her condition was unpromising, and surgical interference was clearly interdicted, so the os and vagina were cleansed thoroughly and lightly dressed with gauze. She was then placed profoundly under the influence of morphine sulphate, with a view to arrest labor and secure rest and recuperation sufficient to permit evacuation of the uterus, which occurred spontaneously twelve hours later. The child was poorly nourished and lived only a few weeks, finally dying of inanition.

A slight laceration occurred in the delivery, the rent taking place in the unulcerated portion of the cervix, but not implicating the vagina. The surface was daily curetted and dressed antiseptically up to the time of the operation, a noticeable effect of which was the decrease in temperature, the elevation not going over 0.5°.

The operation was deferred a few days for the purpose of securing some reaction in the patient that she might be enabled to undergo the ordeal, and to effect through the process of involution some reduction in the size of the uterus. For three days after delivery the pulse ranged from 100 to 120 per minute, quite weak, but slightly improved in volume, with temperature a little more than normal (99° to 99.5°). Her condition was not encouraging even under vigorous stimulation by the mouth and by hypodermatic use of digitaline, strychnine, atropine, etc. The ulceration was so deep at one point that it nearly penetrated the cervical walls, and as she had been so profoundly impressed by septic absorption it was thought best to avoid further delay in operating, lest the rapid extension of the disease and sepsis should put her beyond surgical relief.

After careful antiseptic preparation the uterus was packed with gauze, the ragged edges of the cervix trimmed away, the os rolled in upon itself and closed. The successive steps of the operation then followed.

The greatly dilated vessels attending the gravid state had not sufficiently reduced in size to relieve the increased dangers of hemorrhage, consequently compression-forceps were in demand at each step or turn in the operation. An attempt was made to tie off the broad ligaments, but the parts were so swelled and puffy that it was found impracticable after the lower section was

ligated. The uterus was so large that it well filled the pelvis, so that no room was left to manipulate the ligatures, only space enough for two fingers being available, consequently clamps were employed to complete the work. Morcellation or segmentation was rejected in this case, the extremely anæmic condition of the patient forbidding any unnecessary loss of blood.

On the left side two, and upon the right three clamps were placed above the ligatures, and about a dozen artery forceps were used in other parts of the wound, as time would not allow ligation of bleeding points. Separation of the bladder attachments was tedious on account of the extended surface rendering the peritoneal fold rather difficult of access. Douglas's pouch was thickened by old adhesions, the point of penetration being at least three and a half centimetres thick. There was also a very dense adhesion of the descending colon to the posterior uterine surface, about seven centimetres in diameter.

The peritoneum and mucous membrane over the bladder were approximated by compression-forceps and the wound drained with gauze. She bore the operation well up to the time of cutting the uterus away, when it became necessary to readjust the clamp upon the right uterine artery, as there was a small amount of uterine tissue in the stump, and in order to remove it the clamp required setting back to the ureter. There was no excessive hemorrhage, but what blood did escape was more than she could well spare; for a time the radial pulse was imperceptible after returning her to bed. I directed the infusion of the normal salt solution, which was skilfully administered by my associate, Dr. Taliaferro, with the happiest results. The clamps were removed in forty-eight hours, excepting the one upon the right uterine artery. In endeavoring to disengage the instrument free hemorrhage occurred; it was instantly closed and left for twelve hours more, when it was successfully taken away.

There was no evidence of sepsis, but the heart's action was weak, requiring hypodermatic stimulation for four or five days. The stumps sloughed off and the wound closed by granulation, except at a point on the left side, where a very small ureteral fistula occurred, which closed spontaneously in eight weeks. The woman made a satisfactory recovery and visited Virginia in twelve weeks.

The questions naturally arise: What is the advantage of hysterectomy over Porro's operation? and if hysterectomy is preferable, Should the vaginal or abdominal method be given precedence over the other? To the first I would answer that hysterectomy undoubtedly promises more to the mother than Porro's operation in cases where the disease is confined to the uterus, and I assert that when the cancerous mass can be successfully removed it is the duty of the surgeon to do it, as Porro's method merely bridges the woman over the puerperal state and leaves her to her fate. In radical removal there is a promise of cure.

In answer to the second question, it is evident that the method of operating must depend largely upon the character of each individual case; thus, the vaginal operation may be done when it is desirable to take advantage of the diminished liability to shock, even though the large size of the uterus may render the operation more tedious. Removal by segmentation or morcellation will greatly expedite the work in such instances, but it entails the loss of more blood, that can ill be spared by women worn down by rapidly extending malignant disease, which is always the case in cancer of the gravid uterus. And it exposes the peritoneum to infection from the uterine cavity, which may not be perfectly sterilized even in the hands of very cautious persons.

In hysterectomy by the abdominal method in Trendelenburg's position it is claimed (Wylie, Polk, and others) that the advantage of rapidity in work and the ability to remove more thoroughly the diseased portions, even where the vagina is involved, is of inestimable value, but there is greater danger of shock. If the disease involves the vagina to such an extent that the fœtus cannot be delivered *per vias naturales*, hysterectomy is out of the question, and the case falls to the last resort, the Porro operation, with the hope of saving the life of the child and diminishing the risk of sepsis in the mother.

The mortality in Porro's operation is, according to Harris (*New York Journal of Gynecology*, vol. iii., No. 4, p. 273.),

from 8 to 12 per cent. under the most favorable circumstances and in the hands of experienced operators.

In vaginal hysterectomy for bilateral disease, according to Jacobs (*Modern Medicine*, vol. iii., No. 6, p. 143[1]), it has in 690 cases been reduced to 4.49 per cent., and in 184 of his individual cases to 2.7 per cent., thus showing a much less mortality under ordinary circumstances in favor of the latter operation.

In the face of this showing it is yet a question whether the abdominal method with its advantages and disadvantages should be given preference over the vaginal operation, which is attended with less shock. Wylie says: "Though the mortality from vaginal hysterectomy is very small, complete removal by cœliotomy is, I believe, the operation of the future, as more of the diseased tissue in the broad ligaments and vagina can be removed than by vaginal hysterectomy."

However, it is not my purpose to point out the advantage of one operation over the other, but to show the feasibility of hysterectomy in the puerperal state for cancer of the uterus, as this case clearly demonstrates, even though it is too early in this instance to claim immunity from the return of the disease.

DISCUSSION.

Dr. W. L. Robinson, of Danville, Va.—There are two points in connection with this excellent paper that present themselves to me. One is that we have a pathological condition of the uterus and sepsis preceding delivery which we can expect nothing to relieve or cure except extirpation. Secondly, I congratulate the doctor upon his good judgment and courage in removing it promptly and saving his patient. Had he pursued any other course, with the septic poison invading every portion of the womb in the puerperal state, I can see nothing but septic process and death.

Dr. Joseph Taber Johnson, of Washington, D. C.—There

[1] Also American Journal of Obstetrics and Diseases of Women and Children, Nov. 1894, vol. xxx. p. 648.

are one or two points that I would like to discuss in this paper. I did not catch the statement from the Doctor as to what time in the pregnancy the woman was delivered, whether the seventh or eighth month.

Dr. Noble.—In the eighth month.

Dr. Johnson.—My suggestion would be, if the case had been diagnosed earlier, that it would have given the woman a better chance, and the child, also, if premature labor had been induced before the child was affected by the disease of the mother. As pregnancy progressed with the usual increased vascularity of the uterus there would be a liability to more rapid development of cancer cells, added to which would be the hereditary effect upon the child; also the progressive weakness of the mother. That is one point.

Another point is with reference to the method of doing the operation, if we decide to do it at all. My experience is in favor of the abdominal method. Without going over the main items suggested by such a statement, I simply wish to draw attention to a few points which the Doctor himself made in reporting the case. By the abdominal method all diseased tissue can be more readily removed than by the vaginal method. Hemorrhage can be more readily controlled. The uterus can be removed under these circumstances with very little hemorrhage. There is scarcely anything to bleed when the parts are tied before they are cut, and the uterus can be removed with greater facility, less shock, and with greater certainty of eradicating the entire disease and saving the woman from possible return.

The Doctor speaks of the adhesions which existed, which required time and manipulation to separate. These would have been separated in shorter time, with less manipulation and less danger of laceration of the bowel than would occur in the vaginal method, where he is manipulating in the dark.

I quite agree with him that these cases should not be allowed to perish for want of a brave effort to save them simply because they are in the puerperal state. I believe a number of patients in every town of any considerable size die of puerperal fever of a most progressive and destructive type. Pus is present, and there are general evidences of septicæmia occurring suddenly from some source; that there have occurred salpingitis and the

development of pus in the Fallopian tube, which ruptures and sets up general peritonitis. Quite a number of these patients are snatched from the jaws of death by timely operations, by thorough disinfection, irrigation, and drainage.

I would like to emphasize what the Doctor has said at the conclusion of his paper, that these patients should not be left to perish simply on account of their being in the puerperal state—that state which we have been heretofore afraid to tackle. If the disease is limited to the uterus and its appendages, they can be saved by timely operations. If there is general septicæmia, surgical interference can do no good.

Dr. Rufus B. Hall, of Cincinnati, Ohio.—This is an exceedingly interesting report, and I want to congratulate the Doctor on being able to report an immediate success following the operation, and on demonstrating the fact that he had the courage of his convictions to do what is right in these cases for the reasons mentioned by the last speaker. If I was called to make an operation so soon after delivery, I think I would change the technique a little bit. I think we could from the report of the case and from our experience in other operations in removing a uterus of this size through the vagina. We can give the patient a better chance for recovery by dividing the operation into two steps—that is, by clearing out the uterus, packing it with gauze, removing the sloughing portion of the cancer projecting into the vagina, closing that rapidly with two or three sutures, so that there will not be any of the contents of the uterus escape into the cavity—in other words, to guard against infection. Then put the patient in Trendelenburg's position, and rapidly make the operation of abdominal hysterectomy. If this was done in this way, the commencing operation, the first part of the operation could be done rapidly, and there is no reason why it could not be done in three or four minutes—five minutes at the outside—cleansing the vagina thoroughly, which should be done in every case of total extirpation of the uterus; then cut through the mucous coat around the cervix, pushing it back a short distance. That I find facilitates the rest of the operation a great deal. As soon as the broad ligaments are tied off the ovaries are tied off; then opening the posterior or anterior vault, with the finger as an outline where to cut through with the scissors. An abdom-

inal operation of this kind, with the patient in the Trendelenburg position, in which the uterus is out, need take but a few minutes. I believe this operation could be made in one-half the time required by the vaginal method. To overcome the difficulties present in removing a uterus of this size requires two or three clamps on one side and as many on the other, and it implies that the patient must lose considerable blood, and this can be avoided by the abdominal method.

Dr. Noble (closing the discussion).—I thank the gentlemen for their favorable remarks. They were much more favorable than I expected. The reason I did this operation by the vagina was because the woman was in such a miserable condition that I thought the shock of the abdominal operation would be more than she could stand. I studied every conceivable method of getting rid of the uterus, and I adopted this as what I regarded in this particular case to be the safest. I am not an advocate of any particular method of removing the uterus—each individual case should be its own guide. I do not see how any fixed rule can be laid down for hysterectomy in all cases.

The second point brought out was with regard to the time of the operation. I operated early, and without early interference I feel satisfied that she would have died. The greatest dangers in delay were sepsis and rapidly extending malignancy.

LIGATION OF ARTERIES.

By John A. Wyeth, M.D.,
New York.

In August, 1894, in an operation for the removal of a malignant neoplasm of the left upper jaw, which involved the spheno-maxillary fissure and part of the orbital cavity, it became necessary, as a preliminary operation, to ligate the external carotid artery. In cutttng down upon this vessel by the usual incision (the point of bifurcation of the common carotid artery being, as demonstrated by me in a study of one hundred and twenty-one subjects, opposite the upper border of the thyroid cartilage) I found quite a network of veins crossing from the median line of the neck to the internal jugular immediately over the point of ligation, and spreading from one-half an inch above down to the bifurcation of the common carotid. As it would have taken some time to apply a double ligature to each one of these veins, and as I, on account of the bad general condition of the patient, desired to expedite matters as much as possible, I resorted to this expedient :

By catching hold of the sheath of the common carotid, and at the same time making gentle traction upon the lowermost of these veins with a blunt hook in an upward direction, I found that with my aneurism-needle, armed with a good-sized catgut ligature, I could slip this instrument around the artery just in the crotch of bifurcation of the common into the external and internal carotids. Having every confidence in the healing power of arteries ligated under aseptic conditions, especially those tied with animal ligatures (in preference catgut), the ligature was applied at this point and immediately

tightened. It was so close to the common trunk that it also occluded the superior thyroid branch, which is given off, as a rule, just at this point, and which I saw within the grasp of the ligature as I tightened it. The wound was immediately closed without drainage, and sealed by iodoformized collodion dressing. The operation on the jaw was completed with an insignificant loss of blood, and on the fifteenth day after the operation the patient left my private infirmary in New York City for his home in the western part of the State. There was no hemorrhage following this deligation.

About five years ago, in a similar operation, a ligature was applied at this point with equal success. I do not relate these two cases for any bearing they may have upon the safety of ligation of the external carotid artery, since that question has long been settled. Many of you will remember that in my essays upon the arteries, especially those two which were awarded the first and second prizes of the American Medical Association at Buffalo, in 1878, I demonstrated, as a result of one hundred and twenty-one dissections of the carotid arteries, that the branches of this vessel had a fixed anatomical relation, and that the application of a ligature to the external carotid artery was a perfectly safe procedure, and that the practice of tying the common trunk for a lesion in the distribution of the external carotid was not good surgery. It is a fact known that at that date there was not a work on surgery in the English language that advised the application of a ligature for such lesion in the distribution of the external carotid other than to the primitive trunk. These conclusions were so widely accepted that there is not to-day a work on surgery in the English language which advises *other* than the application of the ligature to the external carotid artery when this branch alone is desired to be occluded.

The reason for my narrating these two cases is to bring before you a consideration of the inflammatory changes which occur in arteries which have been ligated, and to discuss at length the best methods to pursue in these operations to secure the greatest safety to the patient.

It is evident from the two cases narrated that the ultimate occlusion of these vessels was secured without clot on the proximal side of the ligature. The ligature was so close to the common trunk that there was no room for the formation of clot; and the proof that it did not form is evident from the fact that there was no intracranial embolism, which must have occurred had there been a clot formed at the point of ligature, whence it would have been carried along the internal carotid and lodged in some of the terminal capillaries of the brain, producing cerebral disturbances which could not have escaped notice. It proved, as was claimed by Scarpa many years ago, and was demonstrated by myself in a series of experiments made in 1881 and 1882, upon the arteries of horses and dogs, that not only was a clot unnecessary in the occlusion of an artery, but that it was not necessary to divide any one of the three coats of an artery in tightening the ligature; and, in fact, that it was better, and a safer surgical procedure, not to divide any part of any coat of the artery operated upon. In those experiments I proved that it was possible to occlude an artery when only temporary compression was made, of such a character that no one of the arterial tunics was divided.

The specimen from which this drawing was made is from the carotid of a horse, which was pinched for a few hours with a broad, soft ligature made of the sciatic nerve of a calf. It will be seen that the presence of this ligature induced an inflammatory process of a mild character, causing a proliferation of the cells of the intima and of the media, producing a swelling or bulging of the intima, which, had the inflammatory process been continued, would have ultimately caused a complete occlusion of the artery. Several weeks after this operation was performed upon this animal the horse was killed, and the section of the artery under the microscope showed the condition figured in this drawing.

It may be well to consider what changes take place in a vessel ligated under strict asepsis, and in so doing to revert, casually, to the minute anatomy of the arteries, especially

those of the larger size, which become of interest in our operative measures, taking the conclusions of the most recent and, without doubt, the most thorough work upon the ligation of arteries in the English language, or, in my opinion, in any language. (I refer to the splendid work of Ballance and Edmunds upon *Ligations in Continuity*, published in 1891.)

The outer coat of the larger arteries is composed of a closely woven network of connective tissue in which numerous elastic fibres can be seen, which have connections with the elastic laminæ of the middle coat. This coat, in the larger arteries, is proportionately thinner than in the smaller vessels, containing many more elastic fibres, and is more brittle. The middle coat of the larger arteries, the common carotid, etc., consists of elastic films, twenty or more in number, quite similar to the fenestrated membrane of Henle.

They are disposed at equal distances and united with each other by separate elastic fibrillæ passing obliquely between the muscular bundles, these elastic membranes alternating with thin muscular layers. Bundles of white connective tissue occur also in the middle coat, the proportion increasing with the size of the artery. With these fibres are associated a corresponding number of connective-tissue corpuscles, which, when stimulated in any way, will proliferate and form connective tissue.

The inner surface of the inner coat is composed of a continuous plate of connective-tissue cells. Beneath this is a delicate fibrillated layer in which lie numerous branched cells of a like character, so that the inner coat, as far as its power of proliferation is concerned, may be thought of as made up of layer upon layer of connective-tissue cells.

The elastic element predominates in the framework which supports these cells, and, according to Schaefer, the chief substance of the intima in the large arteries is formed of elastic tissue.

The vasa vasorum ramify through the outer coat. Observers differ as to whether or not they extend also into the middle coat. Ballance and Edmunds, from whom this is

quoted, hold that the vessels enter the middle coat. In any event, these inner tunics obtain their nutriment from the vasa vasorum, either by direct communication with these capillaries or by transudation.

When the ligature is tightened sufficiently to occlude an artery, and not tight enough to rupture either the inner or the middle coat, the changes which take place in the immediate presence of the ligature and in the arterial wall are as follows:

The pressure of the ligature occludes the vasa vasorum, acts as a foreign body which has produced a traumatism of the vessel wall, and this blood-stasis in the vessels of the wall is immediately followed by the usual aggregation of leucocytes. The theory which was formerly held, and which theory I adopted in my essay upon the "Occlusion of Arteries and Traumatic Arteritis," written in 1881 and 1882, that the leucocytes took part in the general proliferation, and in this way formed some of the new tissue of the inflammatory process, is now believed to be incorrect. It has been shown by the beautiful experiments of Ziegler, the details of which would not be permissible in this paper, that the leucocytes do not take active part in the process of cell-proliferation. Ballance and Edmunds also adopt this view, considering leucocytes the pioneer of all the wandering group of cells that visit the area of inflammation, and that the real proliferating and repairing agents are the plasma cells, which, as is well known, result from the proliferation alone of the connective-tissue corpuscles. They hold, also, that the leucocytes are not only forerunners of the plasma cells, preparing the way for them, so to speak, but that they themselves furnish food for, and are devoured by, the plasma cells. The plastic effusion at the seat of ligature takes place with wonderful rapidity, and has been found sufficient in thirty hours to conceal completely the loop of the ligature. Distinct endothelial proliferation has been observed one hour from the time of ligation, with commencing agglutination or cohesion of contiguous surfaces of the intima.

Immediately following the presence of the leucocytes, the

connective-tissue elements immediately adjacent to the seat of ligature, responding to the inflammatory process, undergo rapid proliferation, and these new cells bulging from and beneath the cells of the intima rapidly form granulation buds, which, from opposing surfaces, are projected forward and freely intermingle. There follows the usual process of capillary formation in the proliferation of a new tissue; the organization of this into fibrillated tissue, and then the process of shrinkage or cicatrization which permanently occludes the vessel, leaving the point at which the ligature encircled the artery a fibrous cicatrix or cord.

Such, in brief, is the process of occlusion which goes on in a ligature applied in such a position as in the two cases I have narrated, in which no clot can possibly form, at least upon the proximal side of the ligature. It is held by Ballance and Edmunds that it is impossible to apply the ligature so close to a branch that there will not be recesses between the pleats or folds into which the vessel is thrown, where clot will form.

They may be correct in this assertion, and it is known to be true of ligatures tied only a short distance from collateral routes; but evidently there could be no central clot, nor, in my opinion, is there any clot whatever in a vessel upon the proximal side of a ligature tied in the position in which these two ligatures were applied. Only a few years ago it was held by pathologists that the clot itself was an important factor in the permanent occlusion of an artery. Modern surgical pathology has proven that clot is an accident of arrest of the circulation, and of the inflammatory change induced in the arterial wall, especially the tunica intima.

The use of the coagulum is held by Ballance and Edmunds to be threefold, first, to act as a barrier or buffer between the impulse of the blood stream and the seat of ligature, where important plastic operations are in progress which might otherwise be disturbed; secondly, to afford some support, ladder-like, to the plasma cell-invasion, as the latter climbs across the cavity of the vessel; and thirdly, to serve as food

for the invading and actively proliferating army of plasma cells, for it is known that lack of nutriment arrests the activity of the plasma corpuscle and causes it to assume a condition of quietude and encystment.

It is evident that the clot which forms above and below the seat of ligature takes no active part in the constructive process by which an artery is obliterated. This view is indorsed by Ziegler, Cornil, Ranvier, and others. Böttcher goes further, and says that the clot may actually hinder the process of cicatrization. It is now considered, therefore, as a foreign body.[1]

When the coats are uninjured any alteration in the endothelial lining of the vessel by an inflammatory process is sufficient to account for the formation of clot, or for that fatality amongst the blood platelets which precedes the production of fibrin.

An older theory, that of Foster, holds that there is a vital equilibrium between the blood and the containing vessel, and that this equilibrium is sustained while the vessel walls are in a normal condition, and that coagulation results as a disturbance of this equilibrium, due to any inflammatory process.

Zahn has demonstrated that the application of crystals of common salt to the exterior of a frog's artery will cause leucocytes to collect within the artery and adhere to the intima at the point which corresponds to the application of the crystal, and that the number continuously increases until a thrombus blocks the vessel.

That this takes place in an artery which has been tied, and in which blood-stasis is present, has been shown by Lyster, who applied two ligatures to a vein at a point in which there was no collateral branch between the ligatures, and then

[1] The modern theory of clot (Hammersten, confirmed by Halliburton) concludes coagulation due to the action of the fibrinogen of the blood plasma, of a ferment derived from lethal disintegration of blood platelets, a special variety of white blood-corpuscles of small size. Various circumstances may cause the death of the blood platelet. When the inner coat of an artery is ruptured fibrin is first deposited on the damaged recurved tunics. These initiate the disintegration of the cell containing the fibrin ferment.

applied caustic; coagulation took place first exactly at that spot in the interior of the vein nearest to the place where the caustic was applied.

In tying arteries an important point to consider is the selection of a ligature. It seems to me that in the animal ligatures, and especially in well-prepared and properly asepticized catgut, is found the best ligature material. For the last ten years I have used catgut almost exclusively without exception, only once or twice using silk, and then in the ligation of the large venous trunk close to the root of the neck, in which I was fearful that the animal ligature might slip from the blood-pressure in the act of vomiting as the patients came out from under the influence of the anæsthetic. In all the operative work that I have done, which includes ligation of all the larger arteries in the body except the common iliacs and the innominate, having tied the external carotid, common internal, and subclavian arteries in all about thirty times, I have never seen a secondary hemorrhage.

The same ligature material has been used in all the amputations that I have made, and in all ordinary operations upon arteries smaller than those mentioned. I do not see how a better ligature material for practical surgical work can be obtained. It seems to me that the reason for failures recorded with the use of catgut ligatures are due to an inferior ligature, or to one that has been too greatly softened before using, or where suppuration has followed its application.

I prefer to use ligatures which have been prepared in thymol for the larger arteries, because these are firmer and more durable, and for a knot, the double friction-knot for the first loop, followed by the single knot, repeated always twice, and sometimes oftener, to prevent any possibility of slipping. Ballance and Edmunds have originated a knot in which they use floss or flattened silk, using two strands, tying them side by side, the first loop separately, by the double or friction-knot as just described, making the final knot by twisting both of the ends on either side into a single thread and tying it as such over the friction knot of the first two strands. It is

certainly very ingenious, and will hold, but it seems to me not so desirable as an absorbable catgut ligature, properly prepared and applied.

Porta, in four hundred experiments, found that in from one to two years 70 per cent. of catgut ligature had become absorbed, 36 per cent. of silk, 66 per cent. of hemp or flax 20 per cent. of horsehair. Order of rapidity—catgut, hemp, silk, horsehair. It is my rule, in tying all arteries in continuity, to tie in one place, as above described, for I see nothing to be gained in the application of two ligatures and a division of the artery between the two, as advocated by some operators.

DISCUSSION.

Dr. W. P. Nicolson, of Atlanta, Ga.—Mr. President: I was not going to be the first to discuss this exceedingly valuable contribution, but it seems a pity to permit it to go by without debate. We all know that there is no man in the profession to whom we are more indebted for the knowledge we have as to the present status of ligation of arteries in continuity than to Dr. Wyeth. It seems to me, if he had not done anything else, he would have sufficient glory in having established the fact that the external carotid artery can be safely ligated. I do not propose to go into a discussion of the many points in this paper, but I am satisfied Dr. Wyeth has taught that the formation of a clot is not necessary, and that the ligation of this vessel can be made exceedingly close to the bifurcation. I have tied the external carotid artery only twice, once about five years ago, when Dr. Wyeth himself recommended it in his text-book, and said that if the branches given off from the external carotid were too close they should be ligated also, notably the superior thyroid and facial. In this case I tied immediately between the superior thyroid and lingual, that being the most convenient point. My ligature remained, and there was no trouble.

I had another case (of which I spoke to Dr. Wyeth) a few weeks ago in Atlanta, which may represent what he teaches, that the formation of a clot is an accident. Both of my cases have been made as a preliminary step to the removal of the superior

maxillary bone. In this case, an old colored woman, sixty-four years of age, with well-developed *arcus senilis*, I applied the ligature about one-third of an inch above the bifurcation. On the seventh day thereafter the wound was healed perfectly, but she developed hemiplegia, whether due to coincident rupture in the brain or to the fact that a clot formed in the bifurcation and was washed into the internal carotids, I do not know. There was no post-mortem made to demonstrate this, but I believe that there was simply a coincident apoplexy dependent upon the strain upon the cerebral vessels from the operative work.

I am convinced that the operation for ligation of the external carotid artery has a great many useful applications, especially in operations for the removal of the superior maxillary bone for sarcoma. It shortens the operation, for I am sure the artery can be tied in ten to twenty minutes, and after that you have nothing to do but to go ahead and remove the jaw. There is free hemorrhage from the first incision, apparently from the veins filled up, but no hemorrhage from arteries. Outside of facilitating the operation at the time, I am sure it exerts a very large influence in controlling the return of the disease, which is practically inevitable in these cases.

In a malignant case, where I removed a sarcoma of the upper jaw on the seventh day after parturition, the woman remained perfectly healthy for fourteen months, when the disease returned and destroyed life. Many months of her life were due to the fact that nutrition was cut off by the ligation of this vessel. I would like especially to hear from Dr. Wyeth in regard to his experience in this line, telling us the effect of the ligation of the external carotid artery for the purpose of checking inoperable malignant growths about the throat, face, and neck, especially double synchronous ligation, which can be done without any more danger, practically, than single ligation. I have seen a number of cases in consultation, and have recommended this. I am satisfied where we have cases that are clearly inoperable the growth can at least be checked for a long time by cutting off the blood-supply in this way.

I desire personally to express my warmest thanks to Dr. Wyeth for this valuable paper, and especially for his great contribution to surgery in the study of these ligations.

Dr. Herbert M. Nash, of Norfolk, Va.—With regard to what Dr. Wyeth has said concerning the use of catgut, my experience has been very satisfactory with chromicised catgut in tying the femoral artery in a popliteal aneurism of immense size. In this case I tied with sufficient force until pulsation ceased, then closed the wound, and it healed by first intention, without a particle of suppuration, and the large aneurismal tumor disappeared in the course of a few months.

Dr. George A. Baxter, of Chattanooga, Tenn.—I should like Dr. Wyeth to state in his final remarks the means of preparation and size of catgut used in these operations, whether carbolized, chromicised, or thymolized.

Dr. John D. S. Davis, of Birmingham, Ala.—I desire to express my personal appreciation to Dr. Wyeth for his valuable contribution to the surgery of the arteries. I have been a subscriber to his views for some time. It has long been my idea that we do not have the calibre of the artery destroyed by means of a clot, but by the proliferation of plasma cells. I do not hesitate to tie an artery at the bifurcation, for the reason that I do not believe the clot has anything to do with the occlusion of the vessel, nor do I believe that we find or have the clot on the proximal side of the vessel. I think it is exceptional that it exists. If it does exist, it must be in arteries ligated some distance from the bifurcation. I have not seen it.

As to the use of the catgut ligature, many advantages are derived from its use, provided it is made thoroughly aseptic. You can apply that gentle traction upon the artery Dr. Wyeth described; whereas, if you use a silk ligature, you produce severer traumatism to the artery. Where there is arteritis, if you apply too great a traumatism in tying, instead of having proliferation of plasma cells you have an inflammatory exudate forming a fertile field for the deposit and development of germs, and you are liable to get suppuration or destruction of the intima or media, some one of the coats of the artery, and a resulting aneurism. That has been my experience in one case.

Dr. Joseph Taber Johnson, of Washington, D. C.—One point has impressed me greatly in reference to my particular line of work, and that is, the fact that the essayist recommended the tying of arteries with very much less force than we are in the

habit of using. I have seen a great many operations in different parts of this and other countries in which the ovarian artery has been tied for the removal of cystic tumors of the ovaries, tubes, etc., and I have seen a great many cases where so much strength was put upon the ligature as to break it. Other ligatures would be tied, and still they would break. If these arteries can be tied with the force recommended by the Doctor, it will shorten our operations materially and save a certain amount of irritation and profanity.

Dr. Rufus B. Hall, of Cincinnati, Ohio.—I do not want to discuss the merits or demerits of the paper any more than to express my gratitude and appreciation for the original researches of Dr. Wyeth in this line. I desire to call attention to one point brought out by the last speaker on the floor, and it is this: that in the kind of work mentioned by him there is a vast difference between the tissues included in the grasp of the ligature in the cases under discussion and in the one cited by Dr. Wyeth. We have not only the artery, but we have oftentimes a large piece of tissue that is soft; it yields, and we necessarily must tighten the ligature to compress this tissue and artery, and it requires a great deal of force to do so, whereas, if we had only the artery to tie, very little pressure with a small ligature would do it as well.

Dr. George J. Engelmann, of St. Louis, Mo.—I must beg Dr. Wyeth to dwell for a moment, in his closing remarks, upon the catgut ligature. It has been denounced both in this and other associations, and I am sorry for it, as catgut has been a favorite of mine. I have performed ovariotomies as a test, using catgut for all purposes, both internally and externally, and successfully. I myself have had no trouble with it. I have prepared it myself, and an important point is not to use it until it has remained in the solution for from four to six months. I have had quantities prepared at a time, and have kept it for one or two years before using it. Thoroughly and properly prepared catgut is not dangerous; at least it has not proven so in my experience in any of the tissues, and it seems to me that it is the method of preparation which makes it unsafe. I have been unwilling to use the catgut as ordinarily prepared, fearing that I would have unfavorable results. I object to catgut as generally prepared.

It is said to be unsafe, and it is certainly a disagreeable ligature to manage. With one of the methods it is hard, with another it is greasy; it is not pleasant to handle, and does not tie in a good knot. I have prepared it by what I think is Kocher's method—that is, the catgut is wrapped tightly, so as to prevent swelling, on a glass spool, and left for twelve hours in an aqueous solution of sublimate—80 water, 10 glycerin, 10 alcohol, and 1 sublimate; then wrapped more loosely—that is, not very tight—and placed in a solution of alcohol 90, glycerin 10, and sublimate ½ (that is, 1 in 200), and allowed to remain in that solution two months before it is used, or, better, six months. Then it can be used as it is, but it will be a little stiff, less so than other preparations. It has been my practice to place the sutures, needles, or ligatures in equal parts of alcohol glycerin, and water preparatory to operating, taking them out of the solution when needed, and that gives me a ligature which is like silk, which ties as nicely as silk, is not greasy, and is agreeable to the hands. My objections to catgut as usually prepared are its greasiness, stiffness, difficulty of tying, etc., till obviated by this method. An important point is the length of time which it should remain in the antiseptic solution before it is used. Two months is the lowest limit. If you will prepare it in this way in large quantity, and leave it for six months in the solution, there will be no question about its safety, and even if you should use a 1 to 200, or ½ per cent., sublimate solution there will not be too much sublimate to do mischief, especially when it is placed in glycerin, alcohol, and water during the operation, which will get out a little of the sublimate which might prove dangerous. Now I would like Dr. Wyeth to give us his experience, and tell us whether he has had the ill results claimed by many from the use of this most serviceable of all ligatures, which for many purposes seems almost essential.

Dr. Wyeth (closing the discussion).—In regard to Dr. Nicolson's suggestion of not conforming to the advice given in the original paper, he is right. Not long since I tied the collateral branches, tying the external carotid, jamming it up against the common trunk. The artery will heal there.

In regard to double ligation of the external carotid arteries for inoperable cases, I believe that is a wise surgical procedure.

It is not dangerous to do it, and I have done it myself in several instances. I once tied both branches one morning at daylight in forty-five minutes. The patient was bleeding to death from sarcoma of the naso-pharynx. This boy was sixteen years of age, the son of a physician, and had a tremendous tumor in this locality. I tried to remove it, chiselling away the vault of the pharynx and the vomer, making an artificial cleft palate, removing the tumor, and packed the wound. The night afterward reaction came on, we did not tie the carotid arteries, and the boy bled profusely. I got to him at daylight, and found him almost exsanguinated. He could not raise his head for fear of cerebral anæmia. I immediately tied both external carotid arteries, which stopped the hemorrhage, of course. The tumor never recurred, and the boy is well to-day. I do not class it as sarcoma. Ten years have elapsed since that was done.

In regard to catgut, I have at home four or five little cook oil-stoves, which are commonly used for boiling asparagus. They cost $1.50 apiece. I take one with me when I operate, and boil my instruments, my gauze, and my catgut on it. The catgut is boiled in alcohol. I have used catgut in brain operations time and time again, twisted a few strands around and around with very little weight, and tied them with a little binder, left them in the brain, and it did not cause suppuration. I have had one case of brain suppuration in twenty cases I have done. This method of preparing catgut is simple, and everybody can do it. You will never fail if you prepare your catgut in this way. If you want to keep it hard, keep it in a bottle on sterilized thymol. It is very simple, and I need not tell you that the beauty of all successful surgical work is simplicity. Do not use too small catgut, you had better have a good size. Small catgut will break.

What Dr. Davis has said in regard to the leucocytes is eminently correct. If you have sepsis, it will invite a suppurative process which may cause your ligature to slip or to become loose, because of the suppuration itself about the ligature, and the germs that are in the septic pus will eat up everything they can feed on, and they are particularly fond of connective-tissue cells. This has been demonstrated by Ziegler.

In regard to the tightness of the ligature which Dr. Johnson

speaks of, I think the gynecologist is excusable for tightening it a little more in the pelvis than in other situations by reason of the connective tissue in the broad ligaments, but it does not apply elsewhere. It does not take half a pound of pressure to tie an artery tightly with catgut. It is unsurgical to tie it too tightly.

SIMULTANEOUS APPEARANCE OF CANCER IN BREAST AND UTERUS.

By James Evans, M.D.,
Florence, S.C.

Multiple primary cancer is an exceedingly rare form of disease even when it occurs in contiguous parts of the body, but its appearance at the same time in such widely separated organs as the breast and uterus is such an unusual pathological occurrence as to make every instance of it worthy of being placed on record.

The subject of this interesting manifestation of the disease was a lady of fifty-three years of age, married, and the mother of six children. She was a woman of good physique, somewhat above medium size, and had always led an active life and enjoyed most excellent health. Her labors had been natural and easy, and the menopause occurred at forty-six, and passed through without much discomfort or leaving behind any impairment of health. Her father died of cancer of the face, her grandfather of cancer of the stomach, and she had also a first-cousin who had cancer of the breast, which I assisted another surgeon to remove by operation only a few months before meeting the patient. Speedy recurrence of the growth took place in the cicatrix of the wound in this case, and death ensued a short time afterward. Her mother, sister, aunt, and grand-uncle died of consumption.

In January, 1889, this lady consulted me on account of a vague sense of weight and uneasiness in the back and between the hips, which was accompanied with a thin leucorrhœal discharge from the vagina, and occasionally with a slight show of blood which she attributed to a threatened return of her monthly sickness. Vaginal examination disclosed a movable uterus with a cervix

somewhat swollen, tender, and enlarged. Pressing the finger on the cervix and letting it glide over the vaginal surface, any adventitious growth below the mucous membrane will cause the tissues to be less pliable, and the movement naturally imparted to them by the finger will be retarded and less free and easy than in the normal condition.

According to Spiegelberg, this is an early test for cancer, and he, not inaptly, compares it to the sensation experienced in rubbing the finger over a piece of wet India-rubber. This test was exemplified in this instance. The speculum revealed a slightly patulous os with a narrow zone of livid redness encircling it, whose boundaries were abrupt and clearly defined, and in this red spot were several nodules of a darker hue in color. The disease was confined to the cervix, and during its course never extended further than the internal os. At the time of the first examination the parts were gently cleansed of all discharges and an application of equal parts of tincture of iodine and carbolic acid was made. From time to time afterward various alterative and astringent substances were applied, but the only effect observed on the disease was to stimulate it to further activity. On one occasion the os was dilated and the cervical canal was thoroughly curetted and a strong solution of zinc chloride applied to the surface; the disease, however, was not checked in its progress, but continued its ravages until the cervix was deeply excavated and became a mere shell.

In the left breast, a little above and to the left of the nipple, was a hard lump the size of a small filbert, which occasionally she complained was the seat of sudden and transient pain. This small tumor, when pressed from behind against the rib, was apparently of woody hardness, but was nevertheless freely movable and with loose attachments to the gland. There was no enlargement or even prominence of the axillary glands at this time. This growth slowly began to enlarge and was frequently the seat of occasional sharp pain during the years 1889 and 1890. In 1891 the tumor had grown to the size of an egg and became attached to the skin. A few months later the adhesions to the skin were firm enough to cause considerable retraction and discoloration at the point of attachment, and it was evident that ulceration would soon take place. In another year the whole

gland had broken down and disappeared and the disease was extending along the lymphatics to the enlarged glands in the axilla. In 1893 the excavation in the tissues, from repeated sloughs, had extended and involved the axillary glands even to the posterior axillary fold. The left arm now became enormously swollen, and pulse almost imperceptible at the wrist. Although the loss of flesh and strength and the pale and exsanguined appearance of the lady gave unmistakable evidence of the profound impression the disease had made on her constitution, yet she continued to perform most of her household duties, and only required a grain or two of morphine daily to relieve the pain.

The growth had now involved the axillary vessels, and as the tissues in which they were imbedded were continually sloughing away, rendered it exceedingly probable that her death would be due to hemorrhage. The day before her death, in May, 1894, she was engaged in her ordinary pursuits and retired at night feeling quite as well as she had for some time past; just before sunrise she felt the most excruciating pain in the heart and expired in a few moments. No post-mortem was allowed to determine the immediate cause of death, but it was probably caused by a thrombus detached from the axillary vein and carried to the heart.

A striking peculiarity in the history of this case is that when the disease was most active and destructive in the breast, that it rather checked and retarded its tendency in this direction in the uterus.

In looking up the literature of multiple primary cancer among various medical authors and journals which have been accessible to me, I have only found mention made of it by Mercanton in a very interesting essay on the subject, which appeared in *Review Med. de la Suisse Rom.*, a short abstract of which appeared in the epitome of the *British Medical Journal* of June 24, 1893. This author considers the simultaneous appearance of primary cancer in the breast and womb of such rare occurrence as to be truly phenomenal, and declares that in all of his researches he has not been able to find a single trustworthy report of the phenomenon in the breast and

uterus of a patient. He then gives the history of three cases which came under his own observation. In his first case there were indications of the disease in the uterus a year before it was discovered in the breast; in the third case the tumor occurred in the left breast two years before its appearance in the uterus. He contends, however, that true simultaneity of the disease was evident in both cases. In his second case the disease was present in both breast and uterus in an advanced stage of its development.

The present case is unique in that the disease in both breast and uterus was seen in the earlier stage of its growth before any breaking down of tissue had occurred.

Excision of the cervix and removal of the breast were proposed to this lady, but declined; influenced, no doubt, by the unfortunate result which followed operation on her cousin.

Although there is a very general consensus of opinion among surgeons that the most successful treatment of cancer affecting the breast and uterus is early and radical removal by the knife, yet it is doubtful if operation is advisable when the disease appears in multiple form and in distant organs. When the disease is confined solely to the uterus, and recognized at an early stage of its invasion, the prompt removal of the organ is usually followed by permanent recovery; in fact, recurrence less often takes place after removal than in any other organ or part of the body.

Mammary cancer spreads very rapidly along the lymphatics, and it is impossible to determine when the glands in the immediate vicinity become infected, and for this reason removal of the breast is usually followed by secondary growth in the cicatrix.

When more than six months have elapsed since the appearance of the growth in the breast, it is not probable that removal by the knife will effect a permanent cure; and when the occurrence is primary and in remote organs, it denotes either extreme malignancy or more than ordinary vulnerability of the individual to the disease, and operation, therefore, is inadmissible.

DISCUSSION.

Dr. Herbert M. Nash, of Norfolk, Va.—I have seen in my practice many cases of malignant diseases of the breast, and I never think of operating on the breast without examining the uterus before resorting to surgical interference.

CLINICAL REPORT OF SEVEN CASES OF VARICOCELE TREATED BY INCISION AND SHORTENING OF THE SCROTUM.

By W. E. Parker, M.D.,
New Orleans, La.

When I told the Secretary that I would report my cases of varicocele operated upon by incision and shortening of the scrotum it was my intention to discuss, at the same time, the various methods used for this purpose. I subsequently changed the title of my paper, and wrote him to that effect, but suppose that the letter miscarried. I had prepared a paper on another subject, but when I saw your programme I hastily gathered together the histories of seven cases that I had treated by a method that is simple, does not require any complicated instruments, and that has been very satisfactory in its results. The operation is done as follows:

An incision, varying in length according to the size of the varicocele, is made directly over the mass of veins. The varicose veins are then ligated in two places, removed, and the stumps brought together. The ends of the incision are then brought together and the wound changed from a longitudinal to a transverse one. The incision should be sufficiently long to bring the affected side of the scrotum well above the other. There is a slight redundancy of tissue at the ends of the wound when closed, but this in time does not show so markedly as at first, although still present in all of my cases. The operation is easily done, requires but few instruments; you can see what you are doing and there is no troublesome hemor-

rhage. Fearing that the shortening of the scrotum might not last, I had intended to remove, with a pair of curved scissors, an elliptical piece of the scrotum and then sew the wound transversely in my future cases, but have not recently had a case that required operation, and my results have been so satisfactory with the method I have used that I think I will continue to use it. No drainage-tube was used in any of these cases, and all of them recovered with union by first intention and without any complication. Briefly, the histories of my cases are as follows:

Case I.—G. B., laborer, aged thirty-two years, white, came to the out-door clinic of the Charity Hospital, May 14, 1894. Has had dull pain in the left testicle and groin for the past year; has increased in the past three months; masturbated in boyhood, but not since. Is constipated. Had epididymitis three years ago. On examination a large varicocle was found, the left testicle hanging much lower than the right. He was admitted to the ward and that night given ℥ss magnes. sulph., and the parts were shaved and prepared for operation. The next day the operation was performed. The wound healed kindly and the patient was discharged, cured, June 3d. I saw this patient five months after operation; he is still well, and the left testicle still hangs well above the right.

Case II.—Ed. W., negro, aged thirty-four years, laborer. Came under observation June 19th. Large varicocele of left side. Had orchitis five years ago, and suffers from constipation. Operated June 20th. Wound healed by first intention, and the patient was discharged, cured, July 5th. This case especially interested me on account of his race. In a service of three years in the negro surgical service and one year in the male genito-urinary clinic of the Charity Hospital where about two thousand cases per annum were treated, I have seen but one other case of varicocele in the negro. I have not seen this case since he was discharged from the hospital.

Case III.—Mr. T., aged twenty-nine years, clerk, of German descent. Is an epileptic and believes that his varicocele causes the convulsions. Varicocle rather large. Operated June 2d. Wound healed kindly and under one dressing. Saw him in the early

part of October; varicocele well, and left side of scrotum still higher than the right. Thinks convulsions are less frequent and less severe.

Case IV.—Albert H., aged twenty-six years, laborer. He had epididymitis and is constipated. Noticed varicocele five or six years ago, but it did not trouble him until the past year. Operated June 27th. Wound healed nicely, and he was discharged July 10th. He returned the latter part of September with chancroids. Varicocele well, and left side of the scrotum still higher than the right.

Case V.—Mr. J. Saw him in consultation with Dr. R. De Montluzin, who operated. Hebrew, aged nineteen years. Operated July 5th. Discharged July 15th. Had a large varicocele, and thought it interferred with his sexual powers. Dr. De M. tells me that he is perfectly well and that the left side of the scrotum is still higher than the right.

Cases VI, VII.—Were both clerks, one aged nineteen and the other aged twenty-one years. Nothing in history to point to the cause of varicocele. Both operated upon in July and result up to date is satisfactory.

Such, Mr. President, is the history of my cases of varicocele treated in this way. I like the method of changing the wound from a longitudinal to a transverse one in shortening the scrotum, because it shortens the scrotum without any hemorrhage or bruising. Should the scrotum of the left side become lower than the right in these cases I will, in the future, remove the elliptical piece as suggested above. Now a few words as to the indications for treatment in cases of varicocele, and I will be through.

I think that the milder cases of varicocele should be treated with a suspensory bandage, with proper regulation of diet, exercise, and the bowels. I think a varicocele should be operated upon:

1. If it is of large size.
2. If it is very painful.
3. If there be marked nervous symptoms present.
4. If the testicle is atrophying.
5. If the varicocele is increasing rapidly.

6. If it is an obstacle to entering public service.

7. If on account of the patient's occupation a suspensory bandage is troublesome and he desires an operation.

I do not claim that this method of shortening the scrotum, by converting a longitudinal incision into a transverse one, is new, but I have never heard of anyone else using it.

DISCUSSION.

Dr. Herbert M. Nash, of Norfolk, Va.—Do you use catgut or silk as a ligature?

Dr. Parker.—I use silk, Doctor. I will state, in addition to what I had to say in my paper, that the veins are removed between the points of ligature, so that the stumps can be brought together with suture, remain as a buried suture, or caught first in a suture.

Dr. John D. S. Davis, of Birmingham, Ala.—I desire to say a few words in the discussion of the admirable paper of Dr. Parker. He deserves credit for devising so unique, valuable, and simple an operation. This is an operation, I judge, that can be done by anybody, anywhere, and without any bad results. I have never seen this operation performed. My attention has been first called to it by this paper, yet I can appreciate at a glance that there are several points that recommend it. For instance, as I understand it, the Doctor makes a long longitudinal incision, simply drawing the parts up transversely, and in this way shortens the scrotum, giving support to the varicose veins without amputation of the scrotum. Particularly is this an important matter, as a great many men will not allow amputation of the scrotum, yet it is impossible to cure many of them without in some way shortening the scrotum for the needed support. The Doctor pulls up the scrotum and supports the testicle instead of shortening it by amputation.

There are many instruments devised for amputating the scrotum, and it may be done by many of them—just as well by one as another. I have myself devised a scrotal clamp I like very much, a simple instrument with which I can operate without losing blood from the stump. Of course, a few drops will remain in the varicosed tissue; but none may be lost from the stump. It is simply a piece of steel, bent upon itself and closes, as you

see in this skeleton illustration, by a screw attachment. These little notches are occupied by the needles and ligatures while the scrotum is scissored off. The cross-spring at the top prevents undue pressure on the scrotum. I tie the ligatures before taking off the clamp.

Another point I would emphasize, and which is a recommendation for the operation devised by Dr. Parker, is, through this longitudinal or perpendicular incision the doctor, if he so desires, can remove the vessels and then make his closure in the way he recommends.

Dr. W. P. Nicolson, of Atlanta, Ga.—I would like to ask Dr. Davis whether he leaves the spermatic artery, or whether he takes it out with the other? I have no regard for it at all.

Dr. Davis.—It makes but little if any difference. I leave it if I do not accidentally get it in the ligature. If caught up, I ligate it with the veins, and cut out all.

Dr. Nicolson.—I will say a few words in reference to this paper. There are a great many operations for varicocele, and I must admit that I have never amputated the scrotum. I have seen it done, and in many cases it is an ugly operation. This operation, which Dr. Parker presents to us, seems to me to be an admirable one. Shortening of the cord has been done by Bennett, of London. He does not sever the fascia that covers the veins, but takes out a section and ties them together. He claims that the shortening of the scrotum is entirely unnecessary; that it will contract and come up to the testicle. I have made Mr. Bennett's operation, and have seen the scrotum shrink and have not had the varicocele to return. This method accomplishes the result, does not delay the operation, and converts the line of a perpendicular incision into a horizontal one. It requires no more time, no more work, and seems to be a valuable method.

Dr. L. McLane Tiffany, of Baltimore, Md.—The number of operations for the cure of varicocele, I think, is innumerable. There is almost no operation, subcutaneous or otherwise, that has not been done. I believe the essential element is taking away the veins of the cord and stitching the stumps together. That is the operation I do now. I make a longitudinal incision, as does the Doctor; I excise the veins, all except one or two; I do not touch the spermatic artery; I leave it. I leave about two veins running from the testis upward, then I stitch the distal stump to

the proximal one, and I sew up my longitudinal incision as I have made it, and I do not ever take out any stitches. The whole thing is done subcutaneously, and I use silk, never catgut; never see my silk after putting it in the human body. I use floss silk usually.

I have seen within the past week, before coming to this meeting, a beautiful result from an operation done some twelve or fifteen years ago—not by myself, so I can praise its beauty. The patient was operated upon for varicocele by removing a portion of the scrotum, and the result is excellent.

I do not know whether the pain in these cases is mental or not. There is in many cases of varicocele an affection which I have been accustomed to attribute to a nerve, which I do not think has as yet been found in the dissecting-room. It is the cerebro-penile nerve. It starts from the base of the brain and ends about the external genitalia. It is physiologically an important part of the male system.

Dr. Parker (closing the discussion).—I fully appreciate the kind words of the gentlemen who have discussed my paper. My objections to the use of clamps in these cases of shortening of the scrotum are two. We are told by so eminent an authority as Dr. Lydston that we frequently have sloughing. He advisen against closing the wound, because of the profuse hemorrhage we have in such cases. With regard to the hemorrhage, if you start one of the veins bleeding in the cellular tissue of the scrotum, it is a difficult matter to find it. I have seen several cases where I tried to find the bleeding vein, but have never seen a case as yet where I was successful in doing so. The method I have outlined gives you a chance to see what you are doing; you see the veins that are varicosed, and you can tie them.

As to the spermatic artery, I do not think I have ever tied it. I do not think I have seen it in any case I operated upon, and have not looked for it. I do not think I have tied anything but the veins. It occurs to me that by drawing the scrotum up and shortening it, we can do a good deal of good in helping to support the testicle.

In regard to the amount of shortening in these cases, you can make your incision long and draw the testicle well up. I believe I have drawn the left testicle up half or three-quarters of an inch above the right in the cases I have operated upon, as the left one was affected in all of them.

CASE REPORT OF FIBROID TUMOR OF THE UTERUS WITH SUPPURATING OVARY DISCHARGING BY THE RECTUM.

By Rufus B. Hall, M.D.,
Cincinnati, Ohio.

The subject of operative treatment for fibroid tumors of the uterus is one in which the keenest interest is manifested by men engaged in abdominal surgery. The main points in the technique of the operation have been practically settled, but certain minor details in operative procedure are capable of improvement. The greatest difficulty is to overcome successfully certain complications and obstacles occasionally arising, which tax to the utmost the skill of the operator.

The following case, which I shall report somewhat in detail, illustrates a number of these complications, and will serve as a basis for a few remarks to be made later.

Mrs. J. W., aged forty-four years, married sixteen years, mother of five children, the youngest six years old, was referred by Dr. Heady, of Glendale, Ohio. She always enjoyed good health until about five years ago, at which time she observed that the menstrual period was prolonged and somewhat excessive. As time passed on she noticed that this symptom grew worse, and within a year or two were added pain in the back and a heavy bearing-down sensation in the pelvis during and for a few days following the menstrual period. She did not apply to a physician for relief, however, until some time in February of the present year, when the diagnosis of fibroid tumor of the uterus was made, and the usual treatment followed by the general practitioner suggested. This had little effect, either for relief of the

hemorrhage or of the pain, which had become quite severe, especially in the right side of the pelvis and abdomen.

She gradually grew worse until the latter part of April, when she was confined to bed with an attack of general peritonitis. She was very ill, and had a high temperature and rapid pulse for two weeks. She then had a discharge of several ounces of pus by the rectum, which relieved her somewhat of the pain, and the temperature dropped for a few days. Her general symptoms were not at all improved, but were really aggravated. The temperature chart and her general condition showed her to be suffering from sepsis. There were soon added diarrhœa, chills, and sweats. In the course of eight or ten days she again had a discharge of several ounces of pus by the rectum, and was again temporarily relieved. This periodical discharge of bad-smelling pus continued at irregular intervals up to the time she entered the Presbyterian Hospital in my service, June 2, 1894, when the case was first seen by me.

The patient was fairly well nourished; pulse 140; temperature 103°. She was unable to walk or sit up, and had to be carried into the institution. She was having diarrhœa, irregular chills, and profuse sweats, which she said had been of almost daily occurrence since the abscess first discharged. There were intervals of eight or ten days in which there was no discharge of pus; the diarrhœa and sweats were always worse at that time. The patient said there had been no discharge for more than a week before she entered the hospital, and expressed a wish that it would soon discharge again, so that she might have relief.

Examination revealed a hard round tumor in the abdomen, apparently the size of a cocoanut, extending some four or five inches above the symphysis pubis, and slightly to the left side. By combined examination this tumor was diagnosed as the fibroid uterus. Behind and to the right of the tumor, filling up the pelvic cavity and projecting well toward the perineum, was an elastic tumor somewhat larger than the fibroid just described. This latter I believed to be a suppurating ovary, and from the clinical history had every reason to believe there was a communication with the bowel through which it emptied out a small part of its fluid contents.

The patient was in such a wretched condition to be subjected

to a section that an operation seemed to promise but very little. Her friends and physician, who had assumed charge of the case but a day or two before she entered the hospital, were very anxious for the operation, knowing full well that without it she had absolutely no chance for recovery. She was able to take but little nourishment, and that of the blandest character, owing to the irritability of the stomach.

On June 6th the operation was made and the tumor removed. I here present it for your inspection, as it will aid very materially in the explanations to follow. You will observe that the solid part of this tumor is the fibroid uterus, including the neck and cervix. As is my custom in these cases, I made total extirpation. At the side of this tumor there is a sac which represents the suppurating ovary; it is densely adherent to the fibroid uterus. You will see on the lower part of the sac an irregular opening through which you can introduce the thumb. This is the site of communication with the bowel, and will be described later. The opening into the sac near the fundus of the uterus is the point of rupture of the sac during extirpation, after the occurrence of which it was hastily torn open, so as to facilitate washing it out before enucleation. The fibroid tumor rode up out of the pelvis proper and rested upon the sac of the suppurating ovary, which practically filled the pelvic cavity and was universally adherent. The omentum and intestine were adherent over the top of the tumor, closing in every portion of it, as you will observe upon careful examination of the specimen. The adhesions were overcome with considerable difficulty. They were all separated down to near the point of attachment to the bowel at the point of communication. When we neared that point we separated as much as possible of the capsule of the suppurating ovary around the opening, leaving several tags of the capsule attached to the bowel, hoping that thus we might separate the sac from the bowel without making a communication with it, there having been no discharge of pus from the bowel for ten or eleven days. In this, however, we were disappointed, for when we had enucleated the sac we could pass two fingers into a rent in the bowel, which proved to be the rectum just below the promontory of the sacrum. A resection or Murphy button was out of the question. The opening was immediately plugged with gauze and the operation of total extirpation proceeded with.

When we had completed total extirpation we could say with all candor that nothing in the pelvis remained which had the least resemblance to peritoneum. For that reason no attempt was made to close the vagina from the peritoneal cavity with stitches, as is my custom, but the vagina was packed with gauze and our attention turned to the repair of the hole in the rectum. This opening crossed the rectum diagonally, and by experimenting we found we could bring the edges together without materially lessening the calibre of the rectum. With a fine suture of catgut a running stitch was made of the mucous membrane only. After this the muscular coat was brought together with interrupted silk sutures, and on top of this one of the tags which had been peeled from the outisde of the cyst wall, and which was still adherent to the bowel near the opening, was turned over the row of stitches and united around its free margin with twelve or fifteen interrupted silk sutures. The cavity was thoroughly irrigated, the pelvis packed with gauze, and the wound closed. Before the patient was put to bed the sphincter ani muscle was thoroughly dilated.

The operation consumed one hour and five minutes. The patient was put to bed in profound collapse, but she rallied within a few hours and appeared to be none the worse for the severe ordeal through which she had passed.

The gauze in the pelvis was removed through the abdominal incision on the fourth day, and the pelvic cavity washed out with peroxide of hydrogen, there being a free outlet through the vagina. This washing-out process was repeated every four to six hours for ten or twelve days. There was never the least indication of leakage through the bowel injury.

For nearly three weeks the high temperature, rapid pulse, and sweats continued, though not so severe as before the operation. At the end of that time her temperature became normal, and she improved rapidly. She left the hospital the middle of the fifth week, thoroughly convalescent, and is now thoroughly well.

There are a number of questions of operative procedure suggested by this case to which I wish to direct attention.

Whether or not to advise an operation upon a patient suffering from prolonged and profound sepsis during the attack, or wait with the hope of putting the patient in a

better physical condition, is a question that must be decided on the merits of each individual case. It is a question that admits of discussion both *pro* and *con.* There are good grounds for basing an argument on either side, but there are cases where there is nothing left to do that promises any chance of saving life except the radical operation.

The technique of the operation for fibroid tumor associated with a large suppurating ovary is an interesting study. If with extensive raw surfaces in the pelvic cavity, which have been thoroughly bathed in pus during the operation, and no peritoneum to close off this raw surface from the general peritoneal cavity, we use the Baer method, which does not give thorough drainage, I do not believe we will have such satisfactory results. I think total extirpation of the cervix, leaving free communication into the vagina for subsequent drainage, gives the ideal condition, both theoretically and practically, for after-treatment in this class of cases. I can unhesitatingly recommend it.

The separation of the firm adhesions of the bowel in the pelvic cavity should be done with the utmost care, for even then a bowel injury is not uncommon. In cases where there has existed communication for several weeks or months we necessarily have a bowel rent in a very unsatisfactory condition for repair. If there is no peritoneum to be recognized as such for some inches from the injury, and a resection or Murphy button is out of the question, the strengthening of the suture line with a tag of adventitious tissue, as described in the operation, is very desirable. It is a method I have employed on several occasions with perfect results.

Packing the pelvic cavity with gauze, thus keeping the healthy intestine away from the raw surfaces in the pelvis, and protecting the general peritoneal cavity from intestinal leakage, if any should occur, preventing intestinal adhesions there, is a step in advance in the treatment of these cases, and one to be commended. It cannot be fully appreciated by those who have not employed it. I usually remove the gauze in the pelvis on the fourth day and wash out the cavity with

peroxide of hydrogen, repeating this washing out four or five times daily as long as necessary.

Again, forcible dilatation of the sphincter ani muscle before putting the patient to bed adds greatly to the chances for recovery. It causes incontinence for a few days, thus relieving the intra-intestinal pressure from accumulating gases. All of us who have had experience in abdominal work know that the sphincter muscle, in these cases, contracts to such a marked degree that the large bowel frequently becomes enormously distended with gas, and if there is a rent it puts undue pressure on the weak point, thus favoring intestinal leakage into the peritoneal cavity. So far as I know, I am the first man to practise forcible dilatation for this purpose. The first time I employed it was February 6, 1893, in a case of extensive bowel injury in a patient operated upon for extra-uterine pregnancy. The patient recovered.

DISCUSSION.

Dr. Ernest S. Lewis, of New Orleans, La.—Mr. President: I have listened with a great deal of pleasure to the relation of this highly interesting case, and if I have any criticism to offer it refers only to the method of using the gauze. To my mind, it would have been better to drain exclusively through the vagina.

Dr. W. E. B. Davis, of Birmingham, Ala.—Just a few words with reference to this subject of removal of a fibroid tumor with a suppurating ovary behind the uterus. I did not hear all of the paper, but I got the impression from Dr. Lewis's remarks that the patient was in an extreme condition when the operation was performed. I believe in these small fibroids, where we have enough disturbance or trouble to call for operative interference, that the trouble often originates in the ovaries and tubes. We scarcely ever operate for a small fibroid that we do not find a source of pain in the ovaries and tubes.

Another point is this: Here is a large pus sac behind the uterus full of pus; the patient is in a very bad condition, and I would suggest in such a case that we do a life-saving operation

first. If we do a vaginal operation, go behind and incise the pus sac, drain it thoroughly, reduce its size, the patient will get practically well with the exception of the adhesions. Then do a radical operation later. If the Doctor had done a life-saving operation first by relieving the pus sac through the vagina, and then followed it by a radical operation later, it would have been safer. That is the only point I would criticise in the paper.

Dr. W. L. Robinson, of Danville, Va.—This case brings to mind my first laparotomy, and I desire to refer to some of the points in connection with this case. First of all, I will refer to the remark of Dr. Davis in regard to life-saving in these cases. I think Dr. Davis overlooked the fact stated by the essayist, that there was a large opening in the bowel that was pouring its contents in all parts, so that there was not very much chance to relieve the patient with the contents of the bowel going through this opening.

In regard to the removal of the uterus in extreme conditions, I realize fully what Dr. Davis says in doing a life-saving operation. In the case in which I had adhesions and an obstructed bowel, I could neither give an enema nor could the patient have an action of the bowels. I therefore performed a simple operation (eight years ago), and the patient is well to-day.

Dr. Richard Douglas, of Nashville, Tenn.—Those of us who have kept our eye on Dr. Hall are quite well aware that this is not the first time that he has been in the abdomen when other men would have wished that they were not. He has had a desperate case to deal with and has been successful. I do not say this with the idea of complimenting anybody. I never knew Dr. Hall personally until this meeting, but I have known of his work for years. The case reported is intensely instructive to us all. It suggests one of several thoughts. First of all, as to the choice of operation in uterine fibroma. We have three operations which, briefly stated, are (1) supra-vaginal amputation and fixation with Koeberle's *serre-nœud;* (2) amputation after ligation of the arteries; and (3) total extirpation. I do not think, Mr. President, any one of the three operations can be advocated under any and all circumstances. There are cases occurring in my practice in which I prefer to use the method that Dr. Price has been so remarkably successful with—fixation with the

Koeberle *serre-nœud.* In one of my hysterectomies, without disease of the tubes or ovaries to any great extent, where I resorted to ventral fixation of the pedicle, I was remarkably successful. In cases of uterine growth associated with tubal and ovarian disease I think complete or total extirpation of the tumor is the proper thing. In smaller tumors—tumors that extend down into the body of the womb—I think supra-vaginal amputation in order to maintain the integrity of the floor of the pelvis is a good operation.

In regard to the point raised by Dr. Lewis, while the essayist was reading his paper I interrupted him because I could not quite understand why he should drag up through the abdominal incision gauze which was in contact with the opening below, which was so easy to remove, and I agree with the remarks of Dr. Lewis.

In rgard to the need of fistula, I have never yet seen the need of it, nor did I suppose there was any particular need for it. This fistula is no more likely to heal than a fistula-in-ano. That, I think, was the factor in the case which led the Doctor to do a radical operation. The result in this case cannot be sufficiently applauded, and I have enjoyed and profited very materially by the report.

In regard to small fibroid tumors, Dr. Davis says they give trouble because of ovarian and tubal complications. I know of no condition attended with so much physical suffering and absolute distress to a woman as an imprisoned fibroid in the cavity of the pelvis.

Dr. Hall (closing the discussion).—I suppose in the five minutes allotted me I cannot do better than to take up the points that have been discussed. It seems a most unreasonable, unsurgical thing to think that I would introduce gauze in the manner described by some of the speakers. I did not insert the gauze for the purpose of drainage. It was not for draining the abdominal cavity. I put in a glass drainage-tube above the gauze in order to drain the abdomen proper, and the gauze was inserted simply to protect the cavity, to protect the coils of intestine from coming down in the pelvic cavity, the peritoneum being perfectly denuded, and to avoid the operation of opening the abdomen for intestinal obstruction a few days hence. It is a bad place to have

a coil of intestine adherent. My experience tells me that we must protect the cavity and the coils of intestine whenever we can. The gauze, therefore, was not introduced to control hemorrhage, but to keep the coil of intestine out of the peritoneal cavity. In pyosalpinx, suppurating ovaries, if you put a pledget of gauze eighteen inches square in the cavity, with strips of gauze packed inside of this to keep the intestine off, bring the ends out of the abdominal incision and drain the cavity, the gauze does no harm. I have never lost a patient from anything of that kind. I have lost them from pyosalpinx and suppurating ovaries without it. By this means you do not get intestinal obstruction, you keep the intestinal coil walled off. I pack the vagina with gauze in all of these cases, and put it in through the abdominal incision. I pack the vagina until it is full. I drain with a drainage-tube. I take the gauze away at the fourth day; there is no hernia. I simply do a life-saving operation, and that is what we all try to do. In this woman's case no one knew where this communication was—the descending colon, ileum, or where it was. I knew there was a communication from which there was escaping foul-smelling pus, which made me think of leaving the room when the pus passed off. I knew I was working in the right direction, even though I might have lost my patient. I would have been a coward to run away. I was anxious to do an operation in a manner satisfactory to myself without promise of what the result would be. These patients occasionally recover after long and tedious operations, provided they rally, but a long operation usually kills them from shock. I have had the misfortune of losing a couple from shock—cases of ruptured tubal pregnancy; they bled to death before opening the abdomen, and died within a few hours. I think, then, the fact that we could not tell from what part of the bowel this communication was, it would have been bad surgery to have emptied the pus as suggested by Dr. Davis. Had I known just where the opening was, as I now know, I should have done what Dr. Davis would have done under the circumstances. We know that when we get down near the rectum we do not get such a favorable condition for doing our work as when we get a little higher up. I believe the woman could have been tided over by means of a large opening through the rectum and one through

the vagina. In this way we could have unloaded her sepsis and operated on her later. But this is a most difficult point to settle. If you resort to one method, you will regret it if the patient dies; but if she gets well, you will be happy.

In reference to different methods of operating for fibroid tumors, I did not discuss them in my paper. I will throw out the suggestion, however, that the Baer method seems to be in the ascendency. If you do it by the Baer method, you may have complications that you do not hear of in total extirpation. If you do it just as it should be done, what have you left? Cervix and mucous membrane. You could make a total extirpation by keeping the patient on the table a few seconds longer, and you have perfect drainage. If you do the Baer method, in about two out of every ten cases you will hear from your ligatures. I have been discussing a method to overcome the necessity of carrying ligatures out in the vagina. The method of total extirpation is to ligate the uterine artery and its branches, and close the peritoneum above. I have operated twenty-six times in this way, but in every one of them on the fourth or fifth day there was commencing suppuration around the ligature, and the patient had a temperature of from 99° to 101°. I have been trying to overcome this defect by preparing my own catgut, and keeping it from slipping while I bring up the other knot. I put it in a pint of alcohol with an ounce of rosin, as suggested by Dr. Cushing, and it does not hurt it. It does not slip when you prepare it in that way. I have thus used it with great success in this operation.

SOME COMPLICATED CASES OF PELVIC SURGERY.

By J. G. Earnest, M.D.,
Atlanta, Ga.

Case I.—A married woman, aged thirty-seven years, the mother of two children, was admitted to the Grady Hospital, August 31, 1894. The pelvis was filled by a hard mass supposed to be a fibro-cyst of the ovary. When placed on the table, September 1st, for operation her temperature was 102.5° F., pulse 120, urine albuminous. Paralysis of the bladder with incontinence of urine. Upon opening the abdomen the tumor was found to be a solid, almost spherical mass, completely filling the pelvis and displacing the intestines. It was firmly adherent to the entire floor of the pelvis. After breaking up the adhesions with the fingers the pedicle was tied and the mass cut away. The whole floor was bleeding freely, with numerous spouting vessels. The tissue presented a livid appearance, was very friable, so that any attempt to catch up a vessel with forceps simply resulted in pinching off the tissue within the grasp.

The abdomen was very freely douched with hot water, with very slight effect upon the hemorrhage. The water was then removed and hot sponges packed into the cavity for some minutes, which were in turn removed, and the cavity quickly but firmly packed with iodoform gauze. A large glass drainage-tube was inserted, and the abdomen closed; the gauze being allowed to protrude from the lower angle of the wound.

Reacted promptly. Temperature on the following day, 100° F. Twenty-four hours after operation gauze removed. Forty-eight hours after operation drainage-tube taken out. As the patient improved she gradually regained control of her bladder, which had been paralyzed by the pressure of the tumor on the

nerves supplying the base and neck. When she left the hospital, four weeks after the operation, her condition in that respect was about normal. The centre of the tumor was found to be breaking down, and contained several ounces of pus.

Case II.—A widow, aged thirty-two years, mother of two children. Suffered since birth of last child, six years ago, with severe attacks of colic. Action of the bowels always painful. A cyst, apparently about the size of a medium cocoanut, occupied the left side of the pelvis. March 30, 1893 operated on at Grady Hospital. Temperature 100° F., pulse 92. Ether. The omentum adherent to abdominal parietes and bladder. The small intestine was firmly attached to the tumor at several points. Cyst very firmly attached to the floor of the pelvis and the side of the abdomen. Ruptured in attempt to dislodge it. After very tedious work one coil of intestine was freed from the cyst. The others seemed even more firm, and it was therefore thought best to make no further attempt at loosening them or to remove the cyst. The cyst was carefully torn open with the fingers and washed out with very hot water. Glass drainage-tube left in twenty-four hours. Recovery uneventful. The remains of the cyst can no longer be felt, and the colicky pains have disappeared.

Case III.—An unmarried woman, aged nineteen years, was admitted to Grady Hospital, August 24th. She had a temperature of 101° F., and complained of pain in the pelvis and great tenderness of the abdomen and inability to stand on her feet on account of the pain. A cyst on her left side easily made out. August 27th the abdomen was opened and very numerous and dense adhesions encountered. Ovarian cyst on left side the size of a quart cup, dipping down to the bottom of the pelvis, firmly fixed. Over this was a mass consisting of the omentum and some coils of the small intestine intimately blending and firmly adherent to the tumor. The walls of the tumor were rather thick, but quite friable, and in the attempt to tear it loose from the bottom of the pelvis it was opened, and some dirty, semi-transparent fluid escaped of decidedly fetid odor. Any attempt to loosen the adherent intestines and omentum resulted in free hemorrhage, and was necessarily attended with so much force as seriously to endanger the intestine. The attempt was reluctantly abandoned. The rent in the cyst was enlarged with the fingers

until the cyst was laid wide open. It was found to contain, in addition to the semi-transparent fluid before alluded to, some clots of blood somewhat altered in appearance and very offensive.

It was thoroughly emptied and washed out with hot water. The interior of the tumor was carefully scraped with the finger-nail and thoroughly washed and rewashed and scrubbed with a sponge on a long holder. The margins of the rent were examined for bleeding vessels.

As none were found, a large glass drainage-tube was introduced to the bottom of the cyst and the abdomen closed. Tube removed twelve hours after the operation. Recovery uninterrupted. When she left the hospital, a month after the operation, she claimed to be perfectly well and free from pain.

These last two cases are not introduced as great rarities, but simply to illustrate a method of treatment that under certain circumstances is safer for the patient and just as apt to give relief of symptoms as total extirpation of the tumor, also to emphasize a growing conviction that I have, that intestinal adhesions are frequently tinkered with when it would be best to let them alone.

I am no advocate of timid or imperfect surgery, but in cases like the above, where the tumor can be effectually dealt with without disturbing old, thoroughly organized adhesions, that the history and condition of the patient clearly show to be harmless, and in view of the fact that if those adhesions are loosened they will almost certainly anchor at some other point where they may be a source of constant annoyance or even produce a fatal obstruction of the bowel, I believe it best to leave them undisturbed.

DISCUSSION.

Dr. Rufus B. Hall, of Cincinnati.—I did not intend to open the discussion on this paper, inasmuch as the members are anxious to leave, but the principle advocated by the essayist in leaving a suppurating cyst in the pelvis, and the hard-and-fast rule which he lays down there, I cannot indorse.

Dr. Ernest.—I did not advocate leaving a suppurating cyst in the pelvis, but I said it depends on the contents of the cyst. I am very glad Dr. Hall has mentioned this point, because I am very sorry if I was so indefinite in my remarks as to lead anyone to suppose that I would advocate leaving a suppurating cyst in the pelvis.

THE REMOVAL OF AN INTRA-UTERINE FIBROID TUMOR BY MORCELLEMENT; WITHOUT HEMORRHAGE.

By Herbert M. Nash, M.D.,
Norfolk.

The delay and annoyance experienced in operating for intra-uterine fibroids, in consequence of the free hemorrhage, and the bloodlessness of the operation in the case which I shall relate, obtained, as I believe, by the treatment pursued before the operation, has induced me to give the following history, leaving it to the judgment of the Fellows whether it possesses any novelty:

In September, 1892, I saw in consultation Mrs. H., aged about forty-two years, the subject of intractable hemorrhages from the uterus, lasting from two to three weeks of each month, and which had been habitual for several years.

The uterus could be plainly felt above the pubes, and by the conjoined method, sound, etc., the diagnosis of intra-uterine fibroid was made.

Not wishing at that time any radical procedure, she continued under the care of her physician, whose best efforts to control the hemorrhage proved fruitless. On July 11, 1893, she came into hospital for surgical treatment.

The uterus now reached to within two and a half inches of the umbilicus, and she was too anæmic and prostrated for immediate operation.

In order to arrest the bleeding and thus improve her strength, the uterus was carefully packed every alternate day with iodoform gauze, the indirect course of the canal and the uterine cavity rendering the first attempt very difficult.

The effect of the first packing was encouraging, and it was regularly repeated as above stated, the colored discharge becoming daily less until it finally ceased, and, a liberal diet being allowed, the patient rapidly gained in strength, notwithstanding the somewhat painful uterine tenesmus set up by the packing.

On August 26th we proceeded to operate under ether. It was found quite impossible to dilate the os to the extent desired, but there was room enough for manipulation without dividing the cervix, and no difficulty was found in seizing the presenting mass (the attachment of which to the uterine walls had been made out to be sessile), with a strong volsellum. Upon making traction with some force, in order to determine the best method of procedure, the tissue gave way, and the withdrawn part of the detached mass was quite large, *but no bleeding followed.*

This fact decided me to proceed by morcellement, and with the forceps, scissors, and the instrument here shown, the whole growth was removed piecemeal and with only a slightly colored serous discharge.

The previous packing had been so effectual that the growth itself, and, indeed, the uterine walls appeared to have been exsanguinated.

The fragments removed, when under strong compression, presented a mass of fibroid tissue nearly as large as an ordinary cocoanut.

When the patient left the hospital the uterus had contracted firmly and measured a fraction over three and a half inches in depth, occupied its proper position in the pelvis, and she herself has remained to this date entirely well, with perfectly normal functions.

SYMPHYSIOTOMY.

By F. E. Baldridge, M.D.,
Huntsville, Ala.

This operation has been so fully aired and discussed during the past two years that it would seem impossible to say anything new on the subject. I disclaim any intention of attempting to bring out anything which would startle the surgical world. I, however, consider this an operation of such vast and far-reaching importance, and, relatively, so little appreciated, as to deem any effort at keeping it prominently before the profession a praiseworthy attempt. I shall outline its history and technique and give some indications for its employment by way of deductions and comparisons.

It is one of the oldest operations in obstetrical surgery. The records show that it was suggested more than three hundred years ago. I have seen it stated many times that Sigault was the "father of the operation;" such is not the case, though he undoubtedly deserves the credit of its revival. The first recorded operation of which we have any knowledge is said to have been done by Jean Claude de la Courvee in 1644. What success attended it we do not know, only that it sank into oblivion, to be revived in 1768 by Sigault (then a student of medicine) in a monograph submitted to the French Academy. No interest productive of practical results was aroused, and the operation was not done until Sigault himself did it in 1777. He was followed by Siebold in Germany in 1778, then by various Italian surgeons, who achieved but indifferent success, and were subjected to the criticisms of the entire profession for years after it had been dropped in France. Not-

withstanding bitter opposition and discouragement, it was adhered to by the Italians with remarkable pertinacity and commendable zeal until 1858, when it was almost, if not entirely, dropped, until revived by Morisani in 1866—fortunate operation to receive the attention of such a surgeon! To him is due the position it occupies to-day. In this country it was thought to have been performed first by a Dr. Coggins, of Alabama; he is a pretender whose claims are utterly without foundation. The honor belongs to Dr. Jewett, of Brooklyn, N. Y., who performed it September 30, 1892. So much for its history.

As to the technique, there are two classical operations: 1. The open method suggested and practised by Sigault. 2. The subcutaneous or Italian method. Neither is ideal and applicable to every case. Both are so well known as to need no description, and both have been so ably and exhaustively criticised as to leave little room for anything save repetition. However, I have some suggestions to make which a description of the operation will bring out better than a comparative statement. Aseptic and hygienic precautions being all that circumstances and environments will permit, the patient being prepared as thoroughly as possible, instruments, solutions, and all necessary appliances at hand, assistants in readiness, shave the pubis and prepare the surface as for a laparotomy; draw the urine with a metal catheter, leaving it in place as a guide; give antiseptic vaginal douche; cover the abdomen, thighs, and surrounding parts with hot sterilized towels. Everything being ready, extend the patient's legs to secure the normal relations of tissue to tissue. Feel for the pubic spines; having located the joint as accurately as possible, make an incision immediately down upon the symphysis in the median line through all the tissues, extending the incision in either direction only so far as to permit the forefinger to be insinuated beneath the pubic junction. With a sharp bistoury upon the forefinger as a guide, divide the pubic insertion of the recti muscles on either side and the ligamentum arcuatum. Having cut whatever tissues are between you and the joint, push

aside the adipose tissue and prevesical structures. Holding the edges of the wound apart with retractors, insert a metal shield below as an extra precaution to preserve the soft parts from injury. Now that we have reached this stage in the operation, how are we to sever the articulation, granting it is cartilaginous, and hundreds of autopsies have shown that it is rarely ossified? In searching for some instrument better than a bistoury or Galbiati knife, which would answer the purposes of either, while devoid of their disadvantages, I stumbled on Wyeth's "exsector," which, to my mind, is the instrument *par excellence* for this purpose. You all know the instrument. It can be securely fastened by the jaws to the pubis, while the blade with that "to-and-fro" motion will quickly resect with absolutely no danger of wounding the soft parts by slipping or sudden giving of the articulation, an accident likely to happen (as I have seen) when using the knife. Its work can be measured to a nicety. I would modify the instrument by using a knife-blade instead of a saw-blade, except in those rare cases of ossification, or where, as is not infrequent, the line of junction deviates to one or the other side, and there is difficulty of finding it—this latter condition is of no sort of consequence when using this instrument. Before cutting through the joint, whether with exsector, Galbiati knife, or bistoury, two assistants should, by pressure on the hips, prevent immediate separation of the joint, else the soft parts will be badly lacerated. After severing the joint pack the wound tightly with iodoform or bichloride gauze to control the hemorrhage, which, for the most part venous, may at this stage be considerable. After delivery of the child this will cease of itself; if not, tie the vessels as elsewhere. Next the assistants, by constant regulated pressure still preventing a wide separation of the bones, place the patient in the usual position for ordinary labor. Now, as to the ultimate object of the operation—the extraction of a living child. Many have advised waiting for the uterus to empty itself, if it took several hours; this is bad practice. In a selected case, when the uterus is normally contracting and at that stage of labor when a speedy

delivery can be expected, I would advise waiting a reasonable length of time with the hope of the parts relaxing and stretching gradually under the pressure. Shall we employ forceps at once? I think not; until after manipulation and pressure from above, the fœtus fails to descend. If the uterus be, as is most likely, in a condition of atony and the head of the child (supposing a vertex presentation) above or engaged in the brim, I would employ small high forceps or the axis-traction forceps, using only enough force and haste to bring the head down slowly under the symphysis, when the forceps should be withdrawn and the delivery completed by means of two fingers in the rectum. The greatest caution is necessary at this stage to prevent laceration of the soft parts, so the pubic bones must be allowed to separate very slowly and not to their utmost limit unless absolutely necessary. The child delivered, express the placenta by Credé's method. The vagina and parts should be thoroughly irrigated with an antiseptic solution (preferably bichloride, 1 to 4000). Search carefully for any vaginal, vulval, or perineal rent, and suture any found. If none, remove the packing from the wound, secure all vessels still bleeding, thoroughly sponge out the wound, being very careful to leave no clots. Before coapting the edges the finger should be introduced beneath the symphysis, and the tissues underlying prevented from projecting between the bones, which should then, too, be approximated as closely as possible, the wound again sponged out, and the sutures introduced. These should consist of five or six silkworm-gut deep sutures, and as many superficial ones as necessary to secure perfect union. Wiring the bone is to be deprecated. Many prominent operators advise free drainage; this I consider not only unnecessary but harmful, as inviting infection. The wound should be antiseptically dressed and padded with absorbent cotton. A piece of wide rubber plaster should be snugly applied around the pelvis to hold the bones securely in apposition. The knees and ankles should be bound with the toes turned inward, and the patient placed in a bed specially arranged to permit of evacuation of the bowels without disturbing the position. The

urine should be drawn about twice daily for the first three or four days. Where there is reason to believe this cannot be done without disturbing her, a soft rubber catheter should be left in the bladder two days. The bandage should not be removed (except above, to dress the wound) for four weeks, and the patient not allowed to walk for six weeks. Diet and after-treatment as usual and to meet indications, as in cœliotomies. A vaginal douche of bichloride of mercury, 1 to 4000, should be given twice daily.

Prognosis. This will depend in a large measure, as in other surgical operations, upon sanitary and hygienic surroundings and aseptic precautions. Its success involves a clear understanding of these principles and their thorough application. Further than this, the prognosis must be favorable or unfavorable in direct ratio to the condition of the woman—whether the operation was done before the beginning of labor, at the beginning of labor, or after the patient had exhausted herself in a fruitless attempt to expel the fœtus. From the following authentic statistics (*American Journal of Obstetrics*), compiled for different years and different operators with different methods, a fair deduction may be based as to relative mortality and probable prognosis in favorable cases. The statistics of Morisani, during 1893, show a maternal mortality of only 3.5 per cent., and an infantile mortality of only 5.5 per cent. in 55 operations. Varnier, in 124 operations, found a maternal mortality of 4 per cent., and an infantile mortality of 22.7 per cent. The mortality in the United States, according to Garrigues, is to mothers 15.3 per cent. and children 30.7 per cent. Very recent statistics will show considerably lessened mortality.

Indications. The child being alive, the operation is indicated in all cases of generally contracted or flat pelves where the conjugate diameter is not less than two and a half inches; where there is reason to suspect ossification of the fœtal skull; where the fœtal head is unusually and disproportionately

large; where the age of the mother and history of previous deliveries would promise an unfavorable delivery; where from any cause forceps have been applied without descent in a prolonged labor; where the soft parts are so swollen or œdematous as to prevent delivery; where in a normal pelvis from certain impacted malpositions, notably occipito-posterior vertex or mento-posterior face, delivery is manifestly impossible.

Some Deductions and Comparisons. Designed, as this operation was, to supplant Cæsarean section with its great mortality, and that relic of the barbarous ages craniotomy, it bids fair to fulfil expectations as to one, and in a large measure both. There is such a conflict of opinion as yet that no exact line of demarcation can be defined or hard-and-fast rule followed as to which operation to choose in a given case—symphysiotomy, Cæsarean section, or craniotomy. That symphysiotomy can never entirely supplant the section is to my mind evident, but it is equally manifest that it can and will curtail its limits. With an exact system of pelvimetry carefully practised it should never encroach upon the domain of Cæsarean section by being attempted where the conjugate diameter is less than two and a half inches; where there is obstruction to the pelvis from tumors or exostoses; where there is cancer or any condition preventing dilatation of the os, which condition cannot be overcome by incision.

As to craniotomy, it has always been an operation hard to justify, even when the mother was saved. Every surgeon instinctively shrinks from it—this sacrificing one life to save another; the decalogue and Roman Catholic Church condemn it; its own mortality condemns it—a mortality which, from the nature of the operation, has relatively reached its minimum. With the perfection of symphysiotomy, it will be eventually discontinued even when the child is dead. The following statistics showing the relative percentage of mortality to mother and child of the three operations will prove interesting:

Improved Cæsarean section, mortality to mother, 11 per

cent.; to child, 23.2 per cent. Craniotomy, mortality to mother, 7.5 per cent.; to child, 100 per cent. Symphysiotomy, mortality to mother, 9 per cent.; to child, 22.7 per cent.

The above statistics (largely by Harris, of Philadelphia) are the most reliable and conservative, and undoubtedly show to favorable advantage this operation, which has such a practical sympathy for the child as well as love for the mother.

EARLY OPERATION IN APPENDICITIS, WITH A CASE.

By J. McFadden Gaston, M.D.,
Atlanta, Ga.

Upon making some remarks on the paper of Dr. J. B. Murphy before the Surgical Section of the American Medical Association at Milwaukee in 1893, I was asked by Dr. Nicholas Senn if I would recommend an operation in all cases of appendicitis. My reply was that whenever the diagnosis was clearly established I considered the operation warranted, as delay only increased the danger likely to attend perforation of the appendix.

It is evident from the reports of cases supposed to be appendicitis having a favorable termination with expectant treatment, that operative measures are not requisite in all inflammatory processes involving the iliac region. But we must admit that the former classification of typhlitis, paratyphlitis, and perityphlitis was not entirely without foundation in assigning their troubles to the cæcum and surrounding structures. This is emphasized by the facts developed in not a few instances of operations for supposed appendicitis when it is found that the case is an iliac abscess without any involvement of the appendix vermiformis. A striking illustration of this doubtful diagnosis is reported in the *Atlanta Evening Journal* of November 5, I presume without professional authorization, in which it is stated that the patient had been sick about a week with a trouble that looked like appendicitis; but he recovered, and was able to be out upon the street. After being up for three days his fever returned,

and his physician, after consulting with two other colleagues, decided that there was an abscess in or near the appendix which would prove fatal if it was ruptured. The trouble was near the appendix, and the patient submitted to the operation, but it is stated that he is now grieving because the doctors failed to remove it.

The inference is that it was not involved, and hence it was not excised, although the patient had said to the doctor, "I want you to cut off that appendix whether there is anything the matter with it or not," so as to be free from future trouble.

This result is in keeping with the statements published through medical channels, that it is difficult to decide in advance of an operation whether the origin of these inflammations in the ileo-cæcal region is located in the appendix or adjacent structures.

This brings us back, then, to my position that whenever the diagnosis is clearly established the operation is warranted, and I may say, is demanded without delay.

But the fundamental difficulty of making out the precise location of the trouble and diagnosticating unmistakable appendicitis at an early stage of its development confronts the surgeon at the outset, and must be resolved before proceeding to perform any radical surgical operation.

After the pelvic inflammation has gone on until there is a purulent collection which can be detected by palpation, the case no longer requires any acumen for diagnosis or skill in the procedure for its relief. It is nothing more than a circumscribed abscess, which plainly calls for evacuation by an incision and antiseptic dressings. The danger-point has been passed under the *régime* of masterly inactivity in a case of this nature, and it only needs the application of the simplest principles of minor surgery to carry it to a successful termination.

But the great importance of recognizing the incipient stage of appendicitis lies in the risk of perforation, with all its appalling consequences, before there are any patent signs of surrounding disturbance, and here comes the life-saving of surgery in appendicitis.

He who can detect a diseased appendix which threatens perforation, or discern the fact of its perforation immediately after its occurrence, and takes time by the forelock with prompt surgical measures, is the great deliverer.

It has fallen to my lot to observe the serious consequences of perforation of the appendix vermiformis in several cases, and the post-mortem examinations of these fatal results have been reported from time to time during the past twelve years. Some of these cases could have been rescued undoubtedly by a timely operation, and they have served as an incentive for urging a resort to early operative measures so soon as the nature of the disease could be known by the physical signs accompanying appendicitis.

In a paper read before the American Medical Association in the spring of 1886 the following language was quoted by me from Ziegler :[1]

"The vermiform appendage is peculiarly adapted to catch and retain substances passing through the cæcum. Matters which have been swallowed—such as grapeseeds, apple-pips, cherrystones, and the like—and feces may accumulate in the appendage and set up inflammation. Sometimes these become crusted with phosphates and carbonates, and so form fecal concretions or calculi. The inflammation thus set up may extend to all the coats of the appendage, and then attack the contiguous structures, and in this way necrosis and gangrene with perforation may be caused."

The effects produced by perforation of the vermiform appendix vary with the anatomical relations of the parts and the seat of the ulceration. In illustration of this point, I quoted in my paper laid before the American Medical Association in June, 1887, the high authority of Mr. F. Treves, as follows: "The appendix commonly lies behind the end of the ileum and its mesentery, and is directed upward and toward the left. In the only other common position it ascends vertically behind the cæcum. It may, however, be so placed

[1] Text-book of Pathological Anatomy and Pathogenesis. Art. 471, p. 638.

that its free end lies at the brim of the pelvis. If perforation takes place near the attached end, or if the whole tube lies behind the cæcum, the abscess would be in the same situation as that resulting from disease of the cæcum, and would be indistinguishable from it. When the appendix occupies its more common situation, and when the perforation occurs in the free part, it is followed either by general peritonitis, usually fatal under a week, or by the formation of a collection of pus enclosed in a cavity formed by the surrounding coils of intestines firmly united to each other by adhesions."

According to Dr. Fenwick, in ninety-five cases of which accurate details could be obtained, thirty-eight presented localized collections of pus. It is very unfavorable when perforation takes place before adequate adhesions are formed. Fatal peritonitis is nearly always induced.

I went on to state that in cases of doubtful diagnosis presenting reasonable grounds for the conviction that there exists a disorder calling for operative interference, exploratory laparotomy should be resorted to at an early stage after other modes of treatment have failed to afford relief. The consequences of thus opening the abdominal cavity when operations upon the contained organs are not undertaken are not generally serious. Operations in the ileo-cæcal derangements should not be delayed until the physical powers have become prostrated, but resorted to while there is capacity for reaction of the vital forces.

In another paper read before the same body at the meeting in May, 1888, I remarked that while some have claimed that inflammation is set up in the vermiform appendage as a result of derangement of the digestive apparatus, and others have supposed that the entrance of germs into its cavity has developed morbid processes in its structure, the facts go to prove that such causes of disease are rare in comparison with the troubles growing out of local irritation having a mechanical origin.

There is absence of preliminary indications pointing to the nature of the inflammatory process at the incipiency of dis-

orders of the appendix vermiformis which present a problem of difficult solution for the surgeon. At this early stage, however, there may exist a certain degree of sensitiveness upon pressure immediately over the site of the appendix, and this tenderness, revealed by cautious palpation, may serve for the recognition of an incipient inflammation when there is no perceptible thickening or induration in the tissues of the appendix. It is clear that the causative influence, of whatever character it may be, must, up to a certain point, be of gradual operation in the development of inflammation. During this stage it is of the greatest importance to be able to recognize its presence and progress. Not only the external examination should be carefully made, but a digital exploration by the rectum should be directed to the discovery of the seat of the inflammation in the appendix.

There are in most instances some concomitants of the local trouble, manifested in derangements of the alimentary canal, perhaps of a reflex order, prior to the extension of the inflammatory process to the adjoining structures. In the early history of appendicitis it has been noted that there may occur either a disposition to frequent evacuations or a state of intestinal torpor, in which it is difficult to arouse the peristaltic action of the bowels, either by purgative medicines or an enema. During this period the constitutional disturbance is not very marked, and yet there exists usually a febrile state, with slight rises of temperature, so that nice discrimination will detect a departure from the normal condition of the system.

It is found generally that inflammation set up in the wall of the canal by a mechanical irritant leads to perforation and extravasation of the contents, accompanied by a characteristic shock and followed by diffused inflammation. This is the dividing-line between two distinct phases of symptoms, and whatever may have obscured the case previously, it is for the most part well defined after this grave result.

There may be only a circumscribed involvement of the surrounding structures exciting adhesive inflammation in the

serous tissues, which shuts in the exudation from the cavity of the appendix, and thus forms a local abscess. But usually the septic matters permeate in different directions, and set up general peritonitis, with a train of constitutional troubles. With the uncertainty that hangs over the diagnosis in the early stages of appendicular disorders the expectant treatment is generally recognized as the most prudent course, but there is a growing tendency among surgeons to cut the Gordian knot by a decisive step and resort to an exploratory operation by incision for determining the exact seat and character of the disturbance. Some aggressive practitioners have inculcated surgical interference at the earliest practicable period, and with the lights before us in cases of this kind the surgeon is warranted, so soon as he has good and sufficient reasons to believe that there exists progressive inflammation of the appendix, in verifying this diagnosis by cutting down upon it. This course is indicated when the symptoms of a local and constitutional nature are such as to raise a presumption in favor of appendicular inflammation in advance of those phenomena which usually accompany perforation. In other words, an exploratory operation is advisable, with a view to learn the exact condition of the parts involved, and in the event there is no evident manifestation of inflammatory action in the tissues of the appendix or cæcum, and no indurated mass can be discovered in either by careful exploration, the incision may be closed without any probability of serious consequences.

If, however, on the contrary, appendicitis is verified, with or without the recognition of a solid body within its canal, it would be proper to ligate and excise the appendix vermiformis as a security against further inflammatory developments in its structure. Thus all liability to the graver results of perforation would be most effectually obviated, and thus surgery of a destructive order would eventually prove conservative in preventing other grave consequences. The diagnosis of appendicitis clearly cannot be guaranteed without an exploratory operation, as the statements of those most familiar with this

class of cases show most conclusively. It does not augment materially the risk to life, while it insures a radical cure when disease exists.

I would not be understood to favor a resort to the trocar or other mode of puncture to reach a supposed purulent collection in the iliac region, as it is evident that no practical utility results from such procedure, and I am convinced that great harm may ensue from such explorations.

I am on record for the statement, in 1888, that "if there be a doubt in the diagnosis of appendicitis it is solved by a tranverse incision in the iliac region, and if nothing be revealed requiring further surgical interference, the opening may be closed by suturing the peritoneum with catgut in the continuous form of suture, while the fascia, muscles, and skin are brought together by interrupted suture of iron-dyed silk. There will not occur much strain upon the suture in this line of union, and the operation should not be carried further, except when the evidence of disease in the adjacent structures demand a larger field of observation." If this is done with the precautions suggested recently by Dr. Charles McBurney for separating the muscles without cutting their fibres, it will still further simplify this procedure.

In a case of appendicitis not involving any doubt in the diagnosis, I have concluded that an incision of three or four inches made outside of the right rectus muscle, extending perpendicularly downward over the cæcum, will afford the best line of access to the appendix. In case a suppurating tract should be discovered extending upward toward the liver, the opening may be carried up along the linea semilunaris to any extent which may be requisite for exposing the sulcus or the sinus containing pus. Observation of the difficulties encountered in exploring the right iliac region by an incision of the linea alba has led to its abandonment.

This brief outline of the incipiency, progress, and termination of appendicitis, which was presented by me at an early period of the history of this disease, holds good to-day. While others have added to the practical details of treatment

during the past six or eight years, I realize that a more precise and definite description of appendicitis has not been given than that afforded in my papers. They were laid before the profession in the years 1886, 1887, and 1888, and will be found published in the *Journal of the American Medical Association* for those years, to which members are referred.

Having observed in some cases of appendicitis a peculiar pain in the penis, and noticing that others have drawn attention to the same complication, it is not out of place to record that this feature was very striking in a patient recently under my care. If this painful development in the penis is present in the early period of appendicular inflammation, it may aid materially in making a diagnosis at this stage, and I would suggest that surgeons report instances of this kind which come under observation, so as to throw light upon this matter. Of course this feature cannot avail in the female, but it is found that a vaginal examination affords an insight to the nature of the case when a well-defined tumefaction of the appendix exists.

The complications presented in females from ovaritis or distention of the Fallopian tube on the right side introduces an element of doubt in females which is never found in males. I was called to a neurotic lady some months ago, who referred her pain to the site of the appendix, and this was accompanied with a marked sensitiveness upon palpation in the right iliac fossa, with slight fulness in this region, which led me to suspect appendicitis. But all passed away with the treatment adopted, and I was greatly relieved as to the knotty question of diagnosis. It has, however, come under my observation in another female patient to verify the diagnosis of appendicitis made by the attending physician, without recognizing the urgency for an operation upon my first visit as consultant. Upon being recalled three days subsequently the patient was in a state of profound collapse from a supposed perforation of the appendix, and, being impressed with the conviction that she would sink under an operation, I declined to use the

knife. She was really in a moribund condition and died within two hours afterward.

This result impressed me with the great importance of taking time by the forelock, even in cases of appendicitis not presenting symptoms of gravity, and having another opportunity soon afterward of confirming the judgment of a colleague who had diagnosticated appendicitis, an operation was urged.

I have no doubt that some cases will occur in which the patient may recover without any operation, but on the other hand the delay in using the knife must lead to death in many cases which would have been saved by the timely resort to a surgical operation. The great difficulty of deciding in advance which sort of case we are dealing with warrants surgical interference in all cases.

It has recently been a vexed question to decide when an operation is called for in a case supposed to be appendicitis, and it may be laid down as a rule to guide us that upon recognizing the signs of local inflammation with constitutional disturbance, the operation is demanded.

Appendicitis has received so much attention from the profession of late that a successful operation after an established diagnosis in a case of this kind should be recorded.

A young man came under the care of Dr. J. S. Todd, July 21st, having symptoms indicative of appendicitis, and I was called in consultation by him July 23d, and concurred in his diagnosis. It was determined to watch the developments, and on July 24th it was agreed that the progressive local trouble and constitutional disturbance demanded immediate interference. The operation was accordingly made by me with the assistance of Drs. Todd, H. F. Harris, and J. McF. Gaston, Jr. An incision four inches in length, extending perpendicularly downward from the level of the umbilicus on the outer border of the right rectus muscle, exposed the cæcum, and the appendix was found by careful manipulation at its most dependent part. It was ligated off from the cæcal attachment and excised, revealing a small perforation and containing three distinct fecal concre-

tions or enteroliths. Suppuration had already appeared at the lower portion of the incision, which was removed by sponging, and a thick layer of iodoform gauze was packed into the upper portion of the incision temporarily, to prevent any extension of the contamination upward. The peroxide of hydrogen was used for cleansing the purulent focus, and subsequently free irrigation with hot water was employed for all the adjacent tissues. The space below the cæcum was filled with iodoform gauze, extending out at the lower angle, thus securing drainage. The peritoneum was closed in the upper half of the incision with catgut, and the muscles, fascia, and skin with iron-dyed silk suture. The whole was covered with iodoform gauze and cotton, secured by a roller bandage.

The patient was kept under the influence of morphine with atropine for twenty-four hours, after which Epsom salts with senna tea was given by the mouth and by enema, using also the hypodermatic tablets of magnesium sulphate from time to time until the bowels were freely evacuated. There was great discomfort experienced by the patient for several days, but at the end of a week his functions were performed in a normal manner. The stitches were removed one after another from the skin, and adhesive plaster has been used since for bringing the edges of the wound in apposition, keeping gauze in the lower angle.

Upon the tenth day after the operation the ligature was detached from the stump of the appendix and removed. The patient was allowed for the first time to get upon his feet on the fifteenth day, and everything seemed favorable to a speedy recovery on the twenty-second day after the operation. He continued to improve steadily, and soon resumed his business, completely restored to his usual health.

It will be noted that there was a departure from what most operators have inculcated in regard to using purgatives previous to an operation for appendicitis and witholding opiates subsequently. The reasoning of my colleague and myself was that complete repose of the intestinal canal for a time was indicated, and we had no reason to regret this mode of treatment.

It strikes me forcibly that surgeons who are doing abdominal work of late, have been led to an extreme in condemning opiates in all the conditions presented in this class of cases. While avoiding the erroneous practice of locking up the bowels by opium in threatened peritonitis, and urging free catharsis with salines, to prevent peritonitis, it has been overlooked that there is often an element of pain and restlessness which requires an anodyne. Allowing that the general principle of treating peritonitis with salines is correct, I am equally convinced that an opiate influence is often attended with a salutary effect in cases of abdominal surgery, and the result was entirely satisfactory in this case. While this report is brief, it serves to illustrate the importance of an early diagnosis and early operation in appendicitis.

INFERENCES.

1. The first inference from a general consideration of ileo-cæcal troubles is that all collections of pus should be evacuated by free incision followed by gauze drainage.

2. Should the appendix be involved in the abscess and already in a necrosed state, it is fair to infer that the canal is closed so that there is no communication with the cæcum, and hence excision is not requisite.

3. If, on the contrary, the appendix is found to be enlarged and indurated without perforation, it should be ligated and removed at once.

4. In suspected cases of appendicitis, without the signs of suppuration or the presence of a local swelling or induration, an exploratory operation by a transverse incision above Poupart's ligament, with separation of the muscular fibres, should be resorted to without delay.

5. With a clear diagnosis of appendicitis, a longitudinal incision on the outer border of the right rectus muscle, extending downward over the cæcum, is best adapted to reach the appendix.

6. In all cases of recent occurrence in which suppuration has not appeared, but there exists an inflammatory process of the appendix, it should be removed.

PLASTIC OPERATIONS IN CARCINOMA OF THE BREAST.

By J. T. Wilson, M.D.,
Sherman, Texas.

While statistics would lead us to believe that carcinoma of the breast is not so common in this country as in England and some other countries, nevertheless its frequency here, and its fatality, too, are sufficient to demand our best attention and careful study. I believe it is now agreed among a majority of scientific writers that it is primarily a local disease. That being true, there is no reason why early removal should not cure it. It is, therefore, all-important to make a diagnosis at the earliest possible moment, and operate before the glands become involved.

Perhaps, in a majority of cases, when our attention is first called to it, the disease has made considerable headway, involving the surrounding glands and probably showing the peculiar taint; in fact, some authors believe the constitution becomes involved almost simultaneously with the glands.

It has been observed that metastases occur very early in cancer of the breast, which is another reason for immediate operation. It has been clearly demonstrated that the patient has been rendered more comfortable and life prolonged even in a late stage of the disease, when the tissues have been broken down and suppurating, with the neighboring glands much enlarged and the general health greatly undermined.

As soon as the diagnosis is made, or even if there is a suspicion of cancer, it is time to remove the tumor.

It is very generally conceded that if left undisturbed it

invariably progresses to a fatal issue. The time usually given for it to run its course is from thirty to thirty-six months.

The younger Gross declared that the operation, when it does not cure, adds ten months to the life of the patient, but that it definitely cures 11–83 per cent. of all cases, and it is safe from reproduction if three years have elapsed since the operation. Billroth taught that recurrence after a certain length of time—say eighteen months to two years, probably, and three years, certainly—may be regarded as a new growth, and as absolutely independent of the original growth, and arises from a cancer diathesis; he thinks the scar furnishes the condition favorable to development. Halsted differs from this view, and thinks that liberation of cancer-cells from their alveoli or from the lymphatic vessels may start a new cancer, and thinks this theory more plausible in accounting for the late recurrences instead of the cancer diathesis. It is well known by all who have had some experience with cancer of the breast that it does return in a majority of cases, be the cause what it may. My attention was first attracted to this subject of recurrence by witnessing an operation by the elder Gross, it being the sixth upon the same patient.

I believe that all cancerous tumors of the breast should be removed, no matter what stage they are in, if the patient has sufficient strength and vitality to rally from the anæsthetic shock, even though it is almost certain the disease will recur. It relieves the patient from pain and the disagreeable odor of the discharge, if suppurating; it brings a certain amount of comfort, if only for a short season, frees her mind for the time from the oppression and anxiety of the disease, and it gives the patient a chance, it matters not how slender, from immunity of recurrence, and the newer operations give a much more hopeful prognosis than the old.

If the wound should heal, as it most frequently does, it leaves the patient more hopeful and stimulates her with the belief that she is cured, and by relieving her of the anxiety and distress of mind gives her a better chance to build up her

general health. There is no doubt that tranquillity of mind has a marked influence over the general health.

I am of those who believe in preparing the system for an operation generally; but in carcinoma little time should be lost in this regard, for the sooner after its discovery the tumor or disease is removed the more favorable is the result likely to be; even a few days sometimes makes considerable difference. As the poison becomes diffused in the surrounding glands and tissues, the entire system is likely soon to become involved and the prognosis correspondingly grave.

The operation for removal of a cancerous breast has been modified by several eminent surgeons. The old elliptical incision, once so popular, is not so closely adhered to now. Professor S. W. Gross made a circular incision, removing the gland and its covering integument; other operators are guided by existing conditions.

Another point of decided importance is the removal of the axillary and other neighboring glands. I think a majority of surgeons at the present day, following the suggestion of Küster, are advising the removal of these glands in every case, whether they seem involved or not. Some surgeons assert that often gland involvement cannot be known until they are cut down upon and examined, and several begin their operations by first attacking the axilla, giving as a reason that if the mamma is first removed the necessary manipulation may squeeze the fluid up the lymph channels, and thus infect the surrounding glands and tissue.

Volkmann discovered cancer-cells on the fascia of the great pectoral muscle under the microscope, when it appeared healthy to the naked eye, and removed it entire, even stripping the muscle of its delicate sheath.

Halsted goes even further and removes the greater portion of this muscle, part of the pectoralis minor, the loose tissue connecting the supra- and infra-clavicular glands, and stripping the subclavian and axillary vessels of their investing tissue. Halsted's is the most complete operation of any with which I am acquainted.

Haidenhain believes that, even though the tumor be freely movable, it has already advanced through fat and cellular tissue to the surface of the muscle.

The thoroughness of the operation in every case is of supreme importance; the entire mammary gland, every nodule, gland, and tissue, whether cellular or muscular, to which is attached a suspicion of involvement, should be removed with the utmost care, and all skin investing the tumor should be likewise cut away. It will not do, as was often done in former times, to dissect up the skin and leave it for a flap, but it should be removed to the entire extent of covering the tumor in every case.

In many of these operations—in fact, in nearly all—the flap cannot be brought together without considerable stretching, even when the skin has been loosened from its attachment for an inch or more around, and in many cannot be stretched enough to cover the wound, which leaves a granulating surface, and sometimes a large one. Sutures that are stretched tightly in attempting to coaptate the edges of the skin, cut through to a greater or less degree, enlarging their tracks, and by the great tension constricting much of the surface and interfering with the circulation and nutrition, and thus impede the healing.

The recurrence of these tumors often take place in the cicatrix. Prof. Gross, the younger, who devoted much time to the study of this subject, thought it never recurred from the granulating surface, and states that "it is a histological fact that granulation tissue will give rise to granulation tissue alone, and not to epithelial tissue; the granulating surface may be great or small—that has nothing to do with the recurrence." And yet we know that in practice recurrence does often take place in these granulating wounds, sometimes before they are healed over, as well as in the cicatrix. It is true that this may be due to the fact that all the tissue containing cancer-cells has not been removed.

It has occurred to me that when a large amount of integument has been removed, as is sometimes necessary, the attempt

to bring the edges of the skin in apposition requiring very considerable stretching and leaving considerable muscular surface uncovered, the granulating is very slow and there were more frequent recurrences than when the wound was covered by healthy skin and the tension not so great, other conditions being equal. From my very limited experience I am led to believe that by transferring a piece of healthy skin from another part of the body and implanting it over the exposed wound the patients made better progress toward recovery, the wound healed more kindly, there were less pain and trouble, and a better result obtained. The healthy skin thus implanted seems to have a salutary effect upon the adjacent tissues—it prevents irritation and relieves tension.

In doing this operation the diseased parts should be most thoroughly cleaned in the usual antiseptic manner. The part from whence the skin is taken for transplantation should also undergo the same careful treatment, but all strong antiseptic drugs used in this process should be thoroughly washed off. The wounds and graft should not be irrigated with bichloride or other strong solution. In my humble judgment, the application of such drugs to these wounds is injurious; they irritate the parts, which do not heal kindly after it.

The skin flap should be transferred from its bed immediately to the wound when hemorrhage has been controlled, and its under surface should not come in contact with anything but the wound which it is intended to cover. It can be attached to the edges of the surrounding skin by very few delicate silk sutures, sterilized and far apart, to prevent too great constriction; apposition made as nicely as possible and held in place by gentle pressure; the parts covered with iodoform gauze, over which is placed a thick layer of absorbent cotton, covered by rubber tissue, and all confined by a soft flannel bandage.

Great care is necessary in removing the dressing on the third, fourth, or fifth day, and should be first soaked in a warm boric solution until it comes away with the least possible traction.

To be successful, the care to be used in the details of this operation is very important; it requires to be done under the strictest antiseptic principles, and is rather tedious. The careful dissecting away of all glands from the axillary and clavicular regions, the fat and cellular tissue, and that part of the muscle adjacent to the tumor likely to be involved, with as little loss of blood as possible is necessary to success.

The skin replacing that removed may be in one or more pieces, and can be attached to the surface without a pedicle. In removing and attaching this requires the greatest care and nicety of detail; every step to be planned before the operation is begun, with the precaution to have everything ready so that the wound may be covered without unnecessary delay after the tumor has been removed and hemorrhage controlled.

Krause reported to the German Medical Congress in 1893 a number of operations for various diseases where he covered large skin defects by flaps without pedicle, and is much encouraged by his success. He does not include the subcutaneous tissue in the flap, but only the cutis and cuticle.

We need not be discouraged if, after removing the dressing in three or four days, it does not present what seems to us a favorable appearance, as it takes seven or eight days—sometimes longer—for it to begin to take on new life and healthy action. It requires some time for a reorganization and union of the vessels by which the circulation can be completed and nutrition of the parts begins. Krause gives from three to six weeks for healing to take place.

SUBCUTANEOUS INJECTIONS OF LIQUIDS IN ACUTE HEMORRHAGE.

By T. J. Crofford, M.D.,
Memphis, Tenn.

Having recently read the report of a series of cases from Guy's Hospital, London, and another from the Johns Hopkins Hospital of this country, in which intravascular injections of a saline solution were practised in acute hemorrhage, causes me to report some experiences which I have been having for the past few years and to put forward the advocacy of a method simpler than intravascular tranfusion for supplying the system with fluid to take the place of the blood which has been lost. I refer to the subcutaneous injection of fluids in quantities sufficient to supply the deficiencies or sufficient to tide the patient over the crisis. The method I have adopted has served the purpose well, and is briefly described as follows:

Make a saline solution of 2, 4, or 6 per cent. of common salt in an ordinary water pitcher, pour this into an ordinary fountain syringe into the end of the tube of which an aspirator needle has been inserted. While the water is running out through this needle thrust it through the skin into the cellular tissue of the flank or back of the patient. It will be observed that several ounces or a pint of fluid will have been deposited under the skin is quite a short while. The position of the needle can now be shifted to another location without fully withdrawing it and another quantity of fluid deposited. This can be done several times, till a quart or more of the fluid has been injected without withdrawing the point of the needle from the original puncture made in the skin.

It will be argued that the intravascular injection is directly into the circulation, and is consequently, on account of its immediate effect, the better applicable to the crises of the acute hemorrhages which need transfusion most. This may be the case where the necessary apparatus and an experienced operator are at hand and ready to do the operation of transfusion. In other words, where you are looking for a hemorrhage and have prepared for it beforehand it may be best in certain cases, but this has not been the case in any of the cases of hemorrhage with which it has been my misfortune to deal.

When we consider the simplicity of the method which I have above described, that no instruments beyond a fountain syringe and an aspirator needle are required, no operation beyond passing this needle through the skin into the cellular tissue; then, when we consider the rapidity with which the fluid is absorbed after hemorrhage, it is very evident that this method is the most feasible and therefore the most applicable in by far the greater number of cases encountered, whether surgical, obstetrical, or medical varieties of hemorrhage be met with.

I have put the method to test in quite a number of cases, but to avoid tediousness I shall report only three, these being quite sufficient to show its efficiency as well as the ease and certainty with which it can be gotten to work in emergencies.

Case I.—Mrs. V., aged thirty-five years, was operated upon May 19, 1893, for huge pus-tubes, likely of long standing, firm and universal adhesions. Upon enucleation the hemorrhage was very great in spite of my best efforts to control it. By the time the hemorrhage was under control, the incision stitched up, and the patient placed in bed, it was found that the pulse had failed at the wrist. Considerable quantities of a saline solution were thrown under the skin. In a short while she rallied, and made ultimately a good recovery.

Case II.—Mrs. L., aged thirty years, had a tedious delivery on the morning of June 5, 1894. After the child and placenta were expelled she was found to be flowing profusely. A very few moments later she was quite blanched and the pulse had

failed at the wrist. The clots were quickly turned out of the uterus, and it was irrigated with hot bichloride apple vinegar. With the same syringe a large quantity of mildly saline fluid was injected into the cellular tissue of the back and flank. She rallied nicely, and before twenty-four hours elapsed her pulse was 84 beats per minute and of fairly good volume. Recovery perfect.

Case III.—Mrs. M., aged forty years, was delivered on September 25, 1894. A terrific hemorrhage immediately followed. The uterus was emptied, and she was at once irrigated with a hot bichloride solution. No abatement of the hemorrhage followed. The uterus was then irrigated with hot bichloride apple vinegar, with still no abatement of the hemorrhage. The patient was now very much exhausted. The circulation was very feeble. The pulse was 140 at the wrist. The uterus was again quickly emptied and thoroughly packed with iodoform gauze, which controlled the hemorrhage perfectly. A large quantity of saline solution was injected into the flanks and back, and in a very short while the circulation was restored. Her successful progress was uninterrupted from this time on.

In all probability the first two cases would have died without the transfusion. The third case would likely have recovered without it, but she rallied much more quickly and progressed much more satisfactorily with it. It will be remembered that a large per cent. of the patients who die from hemorrhage rally somewhat, and then die some hours or even a day or two later from cardiac exhaustion incident to the lessened blood-pressure.

The operation as above described, if it can be called an operation, is so simple that any assistant or nurse can attend to it while the surgeon or obstetrician is completing his work. No patient who has lost any considerable quantity of blood should be allowed to go without it, especially if the stomach is not in a condition to absorb fluid.

When death takes place on account of the sudden withdrawal of a large quantity of blood from the circulation it is because the heart fails to act.

The heart fails to act because there is a sudden fall in the blood-pressure, which is its continuous direct stimulus.

The diminished blood-pressure is relieved within certain limits by the vasomotor system of nerves stimulating the bloodvessels to contract, thereby adapting the vascular apparatus to the lessened volume of blood.

If the hemorrhage is sufficiently slow for the vasomotor contraction of the bloodvessels to keep pace with it, then life can be sustained with a proportionately small quantity of blood.

From the foregoing the interdependence between the blood, the vascular apparatus, and nervous system is apparent. The indications, then, are: first, to stop the hemorrhage; second, to increase the volume of the circulating medium; third, to sustain the heart and nervous system during the crisis.

It will be remembered that the middle coat of the bloodvessels contains both non-striated muscular fibres and yellow elastic tissue, the former predominating in the small and the latter in the large vessels. In algid congestions there is a recession of the blood into the large vessels in the interior of the body, leaving a diminished quantity in circulation. It is possible for one to die with all the symptoms of hemorrhage, the blood being poured into the large vessels instead of upon the ground. The remedy for present relief of the two conditions would, theoretically, be the same.

THE VALUE OF PLASTIC WORK IN OPERATIONS INVOLVING THE PERITONEUM.

By J. W. Long, M.D.,
Richmond, Va.

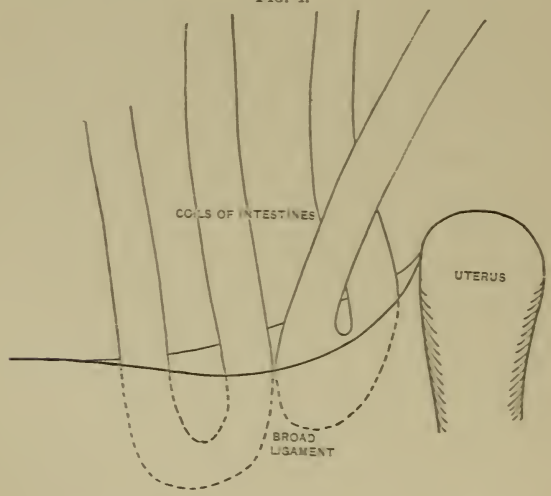
The three essentials in successful abdominal work are (1) *asepsis;* (2) *hæmostasis;* and (3) *plastic work.* We will consider only the last, noticing the first two merely as they are related to plastic work. I think, however, it can be clearly shown that plastic work contributes materially to both asepsis and hæmostasis.

In health the peritoneum offers a smooth external surface, so that the viscera may move easily and without friction upon each other. This is due (1) to the anatomy of the peritoneum, being covered as it is with endothelial cells; and (2) to the serous secretion, which is just sufficient to keep the membrane moist. This membrane has two functions which stand out pre-eminently, (1) the *absorption* of any fluids that may be poured into its cavity; (2) the formation of *plastic lymph*, producing adhesions. The first is, of course, an effort on the part of the peritoneum to carry away deleterious matter. The second is also an effort of Nature, and under certain conditions is a life-saving process. Take for example a case of perforative appendicitis. The appendix is inflamed, ulceration begins from the inner side of the appendix; long before the perforation has reached the cavity of the peritoneum the peritoneum throws out plastic material forming limiting adhesions, restraining and circumscribing the infectious matter, which is poured out through the perforation. The same is true of salpingitis. As soon as the tube is infected the peritoneal

coat of the fimbriated end begins to swell and soon closes the extremity of the tube, thus sealing the tube and preventing the infectious matter from reaching the peritoneum by this channel.

So then this plastic exudation should not be considered pathological, even though we grant that it never occurs in a state of health, but only when some morbid process is present. The abdominal surgeon should ever bear this valuable and to me wonderful property of the peritoneum in mind.

FIG. 1.

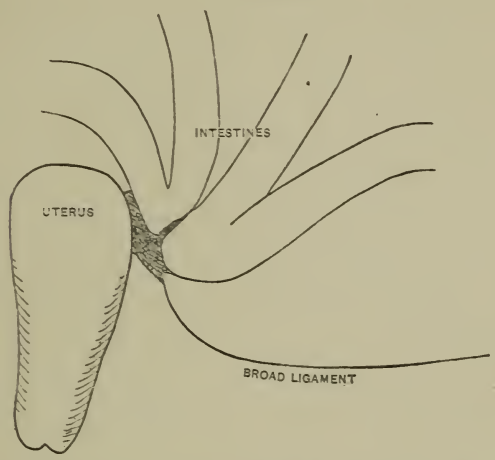


But often this very conservative effort of Nature is perverted into a pathological condition, such for instance are the adhesions forming after abdominal section. These adhesions are hurtful in that they may produce (1) painful peristalsis; (2) constant pain; or even (3) ileus. So common is it for adhesions to form after an abdominal section that the *American Text-book of Gynecology* says they always occur.

The occurrence of adhesions was forcibly impressed on my mind in the case of a negro woman from whom I removed an intraligamentous growth. After hulling out the tumor, the bed seemed clean and free from hemorrhage, and I did not

regard it necessary to close the parts. Four days after the operation I was compelled to reopen the abdomen, because of a leaking intestinal wound, when I found that coils of small intestine had fallen down into the cavity from which I had removed the tumor, and were densely adherent. Had I taken the precaution to bring the edges of the ligamentous wound together the intestines could not have got into the place.

FIG. 2.



Adhesions sometimes form at a *very limited point* that is not covered by peritoneum. I recall an instance of this kind in a case where I assisted my colleague, Dr. Johnston, to do a secondary abdominal section on a young lady, whose tubes and ovaries had been removed by another surgeon, because of epilepsy occurring at the time of her periods. The first operation had been done by a skilful surgeon, but her periods and the epileptic seizures continued, and the woman's mind was rapidly becoming a blank. Dr. Johnston opened the abdomen and found that the former operation had been a very clean and perfect one, and the only pathological lesion to be found was the adhesion of two coils of intestines to the stump of the right tube.

These he carefully freed, covered the abraded surfaces of

the intestine, touched the stump of the tube with the Paquelin cautery, and closed the abdomen without drainage. This case made a rapid and perfect recovery; the periods ceasing, the seizures not returning, and her mind rapidly regaining equilibrium. True, this case is not an ordinary one, the adhesions producing a reflex of a very exaggerated nature, but it serves to illustrate the fact that a raw surface, ever so small, inside the peritoneal cavity may cause adhesions which are very detrimental to health.

The ideal condition in which to leave the peritoneum after an abdominal section is an *unbroken endothelial surface.* For it is to be remembered that even an abrasion of the endothelial layer invites the formation of adhesions. Much greater then is the danger of adhesions when the deeper coats, or even the entire thickness of the membrane, are destroyed. It is also worthy of note, that while two normal surfaces of peritoneum can never unite, it requires that only one of the contiguous surfaces be abraded or injured to set up an adhesive inflammation.

From these facts we learn two important lessons: (1) the readiness of the peritoneum to form *protective adhesions*; (2) the liability of the abraded or torn peritoneum to cause *adhesions that are harmful.*

The first of these is an effort of Nature, and is conservative, the second is pathological, and is always deleterious.

To prevent the pathological effects of the second, we utilize the protective influences of the first. This is done in many ways. For instance, no surgeon would close the abdomen and leave a rent in the parietal or visceral peritoneum. He would carefully suture the edges of the rent together, knowing full well that if he did not adhesions of a dangerous, if not fatal, nature would result.

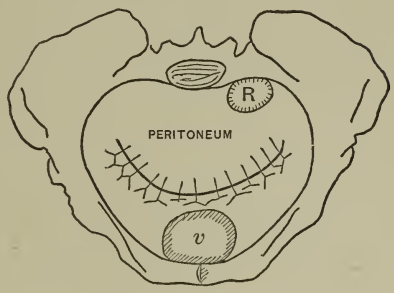
In the now popular operation of *supravaginal hysterectomy* by the intraperitoneal method one of the essential steps in the operation is to carefully suture the peritoneal flaps together.

In looking down into such a pelvis, we see only the bladder in front, the rectum behind, and the whole covered by one

unbroken peritoneal membrane, save a transverse row of sutures, holding the flaps in position.

In these cases when the peritoneal flaps are short, I have even pulled down the posterior wall of the bladder to assist in covering the cervical stump.

FIG. 3.



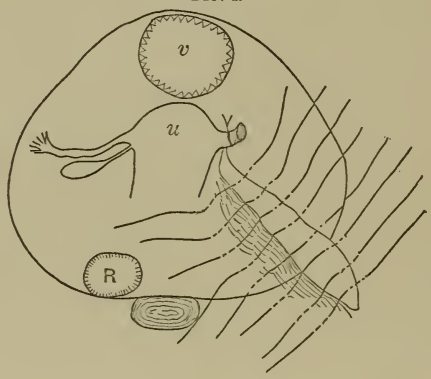
When removing densely adherent appendages it often happens that deeply abraded surfaces are exposed. It is imperative that they be dealt with in one of two ways—either they must be drained or covered in such a manner as to prevent adhesions.

It has been my practise, as far as possible, to cover these abraded surfaces with healthy peritoneum. This cannot be done always. But the peritoneum covering the lateral walls of the pelvis is rather loosely attached to the underlying tissues and may be made to cover adjacent surfaces. Of course, if the case is septic, no amount of plastic work, however beneficial, can do away with the necessity of drainage. Not only do we lay bare these abraded surfaces in the removal of adherent pelvic masses, but sometimes the peritoneum is stripped up from the walls of the pelvis, and important structures, such as the iliac vessels and ureters, are uncovered.

A little plastic surgery will remedy both the abrasion and the tear. By means of a sharply curved needle, armed with a carrier, a (hospital) No. 2 silk suture catches up the non-abraded edge of the rent, then, skipping over the abraded surface, picks up the normal peritoneum. This suture may

be continuous or interrupted. A reference to Figs. 4 and 5 will show how the rent is closed and the abrasion covered by the same procedure.

FIG. 4.



The principle advocated, then, of covering all raw and torn surface with normal peritoneum, whenever practicable, to prevent harmful adhesions, is susceptible of wide application, but need not be further elaborated in this connection.

FIG. 5.

Plastic work is of unquestionable value in *wounds of the abdominal viscera* and in *anastomotic operations.* The principle is the same in both instances, *i. e.,* to bring peritoneum against peritoneum, when the plastic lymph quickly seals the wound in the viscus.

It will be understood that I speak now only of the part which the peritoneum plays in these plastic operations, and do not consider the other very important and essential factor, namely approximation of the deeper structure of the viscera.

Indeed, in some instances it is necessary to bring together only the peritoneal coat, as for example in cholecystenterostomy.

Dr. Murphy has shown that a peritoneal adhesion one line wide is all-sufficient to maintain the anastomosis.

But the value of this procedure for wounds and anastomoses is so obvious that it is trespassing on your time to dwell longer on this point.

As an *hæmostatic measure,* plastic procedures are of undoubted value. All raw or torn surfaces bleed or ooze, more or less. To cover such surfaces with normal peritoneum is to restrain the bleeding and protect the abdominal cavity from the presence of serum. The instances already cited when discussing adhesions might also be used to illustrate this point; therefore I will notice only one other. In vaginal hyterectomy, as soon as Douglas's *cul-de-sac* is opened, it is important that the serosa and vaginal mucosa be sutured together in order to restrain all bleeding. The same should be done in front when the utero-vesical fold is opened. When the operation is completed properly there is no raw surface left uncovered, hence no hemorrhage can occur. It must not be understood that under any circumstances is it intended for plastic work to take the place of thoroughly ligating all bleeding vessels.

Plastic work is also of great service as an *aseptic measure,* because it has been clearly shown that pathogenic germs increase more rapidly when the peritoneum is unable to absorb the liquids which are poured into its cavity. In other words, they flourish more abundantly in a moist than in a dry field. Hence if by plastic work we leave only normal peritoneal surfaces in the abdominal cavity, we not only have the best possible conditions for absorption, but we lessen the amount of the hemorrhage and serous exudation and rob any infec-

tious germs, which by chance may have found their way into the peritoneal cavity, of the pabulum that is conducive to their development.

We may sum up the ideas which have been so imperfectly presented in this paper by saying that plastic work is of value in peritoneal operations:

1. Because it prevents pathological adhesions.
2. Because it induces protective adhesions.
3. Because it is an hæmostatic measure.
4. Because it promotes asepsis.

THE SURGICAL TREATMENT OF SPINA BIFIDA.

By Henry O. Marcy, M.D.,
Boston, Mass.

The surgery of to-day marks the revision of the dicta of yesterday upon many of the operative questions considered settled. Few have seemed more clearly determined than the negative to the interrogatory: Are the varying conditions usually classed under the general name of spina bifida amenable to surgical treatment? The experience of the generations seemed sufficiently ample to determine against further experimental operative interference. An analysis of the cases reported, however, points to the fatal failures as incident to the one general cause—the septic infection of the wound. Sepsis *in loco* does not permit the primary closure of the wound, and non-closure means an undue loss of the cerebro-spinal fluid, with the consequences which must follow from the changes supervening in the great nerve-centres. The septic infection usually extends rapidly along the spinal canal, and the result is necessarily disastrous.

What wonder, then, that all attempts at cure in the earlier period were almost necessarily followed by death?

Are we in a condition, by methods known at the present and at our command, to reverse the verdict as transmitted to us from the past, and which is still generally taught? This is the question upon which I ask your serious consideration. *A priori* reasoning would lead to the conclusion that art could supplement Nature in her defective development. The simplest consideration of the problem in its varying phases

presents a hernial tumor containing cerebro-spinal fluid, the opening through which the tumor escapes being caused by a defect in the bony support usually given the spinal cord in the coverings, the envelopes of the cord, and the superjacent soft parts. The varying of these conditions causes great diversity in the size and shape of the presenting tumor. The hydrostatic pressure is greatly increased the lower the opening in the canal, and, as a consequence, the greater the dilating force exercised upon the hernial envelopes, when the patient is in the erect position. Granting that an operation can be successfully performed, the liability of the return of the hernia diminishes the higher the vertebral opening. If the opening is in the lower part of the canal, can the soft parts be utilized so as effectually to prevent a return of the hernia?

The limit and purpose of this paper hardly permit the discussion of some of the interesting phases of the subject. Do we find the envelopes of the sac unimportant, permitting their removal without serious injury to the organism? Is it usual that important nerve filaments are distributed over the interior of the sac, and that their removal may inflict a serious and permanent result? Is paralysis of important nerve-functions to follow?

Cerebral surgery has taught that under proper precautions the envelopes of the brain may be opened with little danger, even the great cerebral centres invaded with a minimum of risk. Laminectomy may be undertaken with very little danger to life, and tumors of the spinal cord are considered within the domain of the surgeon. The reasons of advance in these directions are all found in the surgical skill applied *under aseptic conditions*, the skill itself from either the anatomical or surgical standpoint being little if any more perfect than that exercised a generation ago.

From the above the inference is that the aseptic operation upon a spina bifida should not be especially dangerous. Undertaken with a reasonably minimum danger to life, is it possible to reform and reinforce the structures so as to hold out a prospect of cure? I have long felt that the essential

features of the surgical treatment of spina bifida were the same as in the operation for the cure of hernia: the isolation and the removal of the sac, having first ascertained its contents, and the reinforcement of the structures in a way to, as far as possible, prevent the return of the tumor. Although there may be a considerable variation in the pathological conditions found in operable cases of spina bifida, the one important consideration to be kept in mind is that the sac of the tumor is in direct continuity with the spinal canal, and that the fluid contained therein is in intimate relation with that surrounding the great cerebral centres. Undue loss of this fluid in the opening of the sac may result in sudden death, because the changes incident to the disturbed relations of the intercranial organs. On this account the head must be considerably lowered prior to the opening of the sac.

A free dissection is necessary, elliptical incision being made upon either side, reserving ample lateral flaps to compensate for the retraction of the distended covering. It is wise to carry the dissection entirely to the base of the tumor before opening the sac, since, owing to the distention, the relation of the structures is more easily defined. Having placed the patient upon an inclined plane, the sac should now be emptied, and this is best effected by a trocar in order that the fluid may be somewhat slowly withdrawn, and thus the operator can observe the changes, if any occur, in the cerebral centres.

It is also a matter of interest to note the amount of fluid contained in the sac.

Owing to the fact that certain more or less important portions of the spinal cord are often spread out upon the inner wall of the sac, it is best to open the sac freely and dissect the same, if possible, for the purpose of returning any nerve filaments thus found within the spinal canal. This having been effected, the walls of the sac are carefully held by an assistant, in order that the base may be coapted by suturing. This is best accomplished by the use of a needle with eye near the point, so as to apply a double continuous suture

which encloses the entire base of the tumor in even uniform compression, the stitches being subdivided as the operator judges advisable It is well to remember that coaptation and compression sufficient to prevent the leakage of the fluid is all that is desired; force beyond this, applied to the parts enclosed, cuts off the circulation in the tissues and may lead to necrosis of even aseptic structures. A tendon suture is greatly preferable to catgut, since it is much more slowly absorbed. An aseptic animal suture is important, since it is deeply buried and must remain in close approximation to very important structures.

The sac is now cut away at about half an inch exterior to the line of suturing in order to allow sufficient tissue for intrafolding the divided edges, which is done by a parallel suture introduced from side to side. The stump thus sewed across, the next important step in the operation is to anchor it firmly for the permanent support of the reformed spinal canal and reconstruct over it as strong supporting structures as possible. To effect this, the stump is closed down upon either side to the strong fascia of the muscles. Efforts have been made for the planting of periosteum for the purpose of reforming the spinal arches of the vertebra, but with doubtful success. Generally the osseous structures are so wanting that it is very difficult to find the lateral arches and utilize them for any purpose. The more or less considerable superficial wound is now closed with buried animal sutures, the skin itself coapted in this way, and the wound sealed with iodoform collodion, reinforced with a few fibres of absorbent cotton. A wound so treated, if aseptic, must thus remain, and if non-infected, primary union will supervene. I am now fortunate in having a typical illustrative case to report, after which I subjoin a brief history of the operation.

Miss B., aged eighteen years; healthy family. Normal development at birth, except a soft swelling under the skin in the lumbar region, size of half an orange. This has grown steadily until the present, rather more rapidly of late. Patient has been in fairly good general condition; a little below the

average in height, weight 125 pounds. She is bright intellectually and fond of her books. For some years has worn an elastic supporter, made to fit the tumor, which encircles the body. Tumor not tender or compressible; circumference in its largest part, twenty-nine inches; measurement in line of spine is nineteen inches; transverse, eighteen inches, nearly circular in shape and not unlike a large football. Wave impulse distinct, with the covering evidently very much thinned out upon the right side. Slightly clubbed feet with indrawn toes, otherwise normal development. Has consulted many surgeons, who have invariably advised against surgical interference. I determined to operate because of the increasing size and extreme thinness of the sac, thinking rupture imminent. The patient gladly sought relief and readily consented to an operation, as she was becoming morbidly sensitive, and exercise was limited, with an ever-increasing caution and fear.

Operation, October 16, 1894. Assisted by Drs. H. C. White, G. L. Ammerman, and H. O. Marcy, Jr., I made elliptical incisions through the skin upon the cyst wall, and the flaps were dissected quite to the base upon either side of the tumor, the pedicle being about three inches in diameter, with thick walls. Elevated the hips of the patient, so that the spine was upon an angle of perhaps fifteen degrees, before opening the sac. The tumor contained one gallon of perfectly clear colorless fluid; specific gravity, 1010; slight trace of albumen. A little to the left of the median line the *cauda equina* was spread out upon the wall of the sac, perhaps two inches in width. This was carefully dissected and returned within the canal. The opening was through the two lower lumbar vertebræ. The sac was closed carefully with a double continuous Kangaroo tendon suture and cut away. The cut edges were intrafolded by a continuous *parallel* suture taken from side to side. The base was stitched carefully to the strong aponeurotic fascia of the *quadratui* laterally. Then the flaps were closed down with lines of running buried sutures, in order to leave no pockets or open spaces, and the skin brought into apposition with a buried suture as in laparotomy, and the wound sealed with iodoform collodion. A small drainage-tube was inserted in the lower angle of the wound, which was removed the second day. The union was entirely primary and the

recovery rapid. For a day or two she complained of burning sensations in, and twitchings of, the feet. There were no cerebral disturbances. Slight paralysis of the sphincters supervened, which disappeared at the third week. At time of writing—November 9th—patient is up and dressed, the cicatrix firm and not tender, with only a slight line to mark the incision. She has been kept for the most part of the time in the horizontal position, that the hydrostatic pressure of the fluid in the spinal canal may not dilate the consolidating structures. I find no case reported where the tumor had developed to such an extraordinary size.[1]

The subjoined cases have been found after a careful research of the medical literature, extending through a very considerable period. Very likely it is incomplete, but it shows that the operation was first intelligently advised and executed by American surgeons. If ever operative treatment becomes a rule in practice it must be based upon aseptic precautions, the resected parts closed and reinforced by buried sutures, preferably tendon, to be followed by primary union. Under these conditions I confidently await the verdict of the future.

I quote the first suggestions which I find as to the operative treatment of spina bifida from the work of Sir Charles Bell, published in 1791.[2]

"But if the opening between the spinous processes of the vertebræ with which it is always accompanied be not the *effect* of the disease, as it is commonly supposed to be, and if the want of support which this deficiency of bone must create to the membranes of the spinal marrow be the *cause* of serious effusions within these membranes, might not some advantage be derived from applying a ligature round the base of the tumor, not merely with a view to remove it, but also to draw the bottom of the cyst so closely together that it may act as a proper support to the parts beneath? Whether any benefit may be derived from it or not is no doubt very uncertain;

[1] Patient was discharged from hospital at the end of the sixth week, wearing an elastic compression-pad when in the upright position. Cicatrix firm and unyielding. Is well in every way—attends to her studies, takes long rides, walks, and has no suffering.—April 15, 1895.

[2] A System of Surgery, by Benjamin Bell, vol. iv., p. 74.

but in a disease which we know will otherwise terminate fatally, we are warranted in proposing whatever can afford even the smallest chance of safety; so that I mean to attempt it in the first case of this kind that falls under my care."

Sir Astley Cooper reported two successful cases of spina bifida cured by repeated tappings followed by compression.

Dr. A. Trowbridge,[1] of Watertown, N. Y., so far as I have been able to find, was the first who attempted to put in practice the suggestion of the great Edinburgh surgeon.

His first case was a boy of eighteen months, otherwise healthy. "Tumor over lower cervical vertebræ, size of an egg, entirely covered with cellular substance. Small silver wire was put around base of swelling, passed through a canula, and brought moderately tight, so as to produce slight inflammation on the surface of its base. At the end of second day I passed scalpel on outer side, close to wire, divided and separated outer portion. A preternatural opening was perceptible between two lower cervical vertebræ into spinal canal. Discharge of fluid from small opening in centre. Wound completely healed and child cured."

His second case was a boy two and a half years old. Tumor over three lower cervical vertebræ, seven inches in circumference. Wire and canula placed on base. Ligature remained four days, then drawn tightly to prevent circulation. Nine days from first application cut away the tumor above ligature. Ligature came off, followed by the spouting of a wineglassful of turbid lymph, tinged with blood, from small opening in spinal canal. In four weeks the whole wound was cicatrized and sound.

His third case was a child four years of age. "Large tumor over sacrum and three lower lumbar vertebræ. At time of operation tumor was thirteen inches in circumference, seven inches at base. Incision through integuments, leaving enough to cover wound. A cavity was presented containing

[1] Boston Medical and Surgical Journal, vol. i., No. 48, January 23, 1829.

several cysts or sacs, resembling intestines, filled with fluid. Removed whole by dividing membranous attachments near the spinal muscles. Child recovered and remains well."

In the *Western Journal*, 1837, Dr. William Judkins, of Cincinnati, Ohio, reports a case of spina bifida cured by ligature. Tumor the size of an egg in lower cerebral vertebra. Child, three months old. Ligated at first loosely, then tightly, and at last very tightly. Separated on the tenth day. Cure, two years after, remains complete.

Dr. Brainard, of Chicago, was the first to use injections for the cure of spina bifida, in 1848. He used iodine and iodide of potassium in solution. In his paper published in 1861 he reported seven cases treated, with three recoveries. Dr. Morton substituted glycerin instead of water; about 50 per cent. of recoveries are reported.

In the *Annalist*, of New York, published in 1846, under the title of "Spina Bifida Cured by Excision," Dr. A. G. Purdy reports a case upon which he operated in February, 1842. Child about a week old; tumor in lumbar region the size of a small orange, with a neck about an inch in diameter. The surface was ulcerating. The sac was opened and the spinal cord was clearly seen. The integuments were carefully dissected to the neck and the sac excised. There was a slight oozing for some weeks. Paralysis of one leg followed, which did not entirely disappear until the third year. The cure is considered perfect.

In the *Monthly for Medical Science*, Edinburgh, 1847, Mr. William B. Page reports a case of spina bifida cured by ligature. Child, twenty-one months old. Tumor in lower lumbar vertebra, spheroidal in shape, measuring seven inches in circumference and five at its base, covered by skin. After repeated attempts by compression with the elastic ligature, the tumor was dissected to its base and the cyst ligated very tightly. The skin sloughed. The ligature came away on the sixth day; the cicatrix contracted and remained firm. Cure was reported as complete.

In the *New York Journal of Medicine*, 1849, Dr. L. A.

Sayre reports a case of spina bifida. Child, two years of age. A fluctuating, pendulous tumor, about the size of a hen's egg, with a small neck, was situated over the sixth cervical vertebra; transfixed with a double ligature and ligated tightly. On the twenty-third day the ligatures came away, leaving the wound entirely healed. "Query: Was not my success owing entirely to the strangulation by the ligature, thereby cutting off all communication with the spinal cord and in causing it to heal over close to its origin, and thereby supplying the place of the bony arches?"

In the *American Journal of the Medical Sciences*, 1855, Dr. J. C. Mott reports a case cured by excision. Child, one month old; tumor in the middle lumbar vertebra the size of an egg. "After the sac was removed an opening into the spinal canal was exposed about the size of the end of the finger, and a tablespoonful of fluid escaped. Closed by pin and twisted suture; finally sloughed and closed by granulations. Two months later the cure seemed complete."

In the July number of the *Boston Medical and Surgical Journal*, 1862, Dr. Elisha Huntington, of Lowell, reported a case of spina bifida. Child, six months old; otherwise healthy, except a slight varus of one foot. "The tumor hung like a pendulous polypus from over the vertebral column, and about on a line with the crest of the ilium. It had a peduncle which was about a foot in length, and about as large as the little finger, but enlarging somewhat just before it joined the body of the tumor. This last was nearly the size of two fists." Immediately after birth a ligature was applied, as nearly as possible to its origin, to the peduncle, and the tumor was cut away. The ligature slipped, and a nearly fatal hemorrhage occurred. Recovery was rapid, and the child is strong, with only an irregularity of surface to the feel. Dr. J. B. S. Jackson examined and reported it as a very rare case of spina-bifida. The cavity of the peduncle admitted a probe with difficulty. Specimen in Warren Museum, No. 852.

Dr. Henry G. Clarke, of Boston (*Boston Medical and Surgical Journal*, July 1862), reported a case of spina bifida in

sacral region. Girl, seven years old; otherwise in perfect health. Operated on at Massachusetts General Hospital. About one pint of colorless fluid was evacuated by a trocar; specific gravity 1006. Needles armed with strong ligatures were thrust through the base and tied very tightly. Patient suffered very much. The tissues sloughed, and the fluid began to leak on the fourth day. Death occurred on the fifth day. The autopsy, made by Dr. J. B. S. Jackson, showed that the spinal cord was lost upon the inside of the sac, about two inches from the opening, and that at least a portion of it had been included in the ligatures.

In the *Transactions of the Pathological Society of London*, vol. iv., Dr. Thomas Smith reports for Dr. Wilson under date of January, 1863, a case of cure by excision. Child, about one month old; tumor several times aspirated. Five days previous to operation compressed by a steel clamp. Dissected and excised. "The cut edges of the spinal membranes were lightly touched with a red-hot needle to promote adhesions. Sutures were applied to the wound and pressure to the pedicle of the tumor. The child recoverd from the operation without a bad symptom, and twenty days afterward the wound had entirely healed." Dr. Smith remarks, "Surgically this case is one of interest, having been the first operation of the kind that has terminated successfully in this country."

Rizzoli, of Bologna, operated in 1869 and again in 1871, upon spina bifida by the use of his specially devised clamp forceps. The compression was graduated so as to cut off slowly the circulation. The cures were complete with firm cicatrices.

Dr. James Weaver (*London Lancet*, 1870, p. 841) presented a child for the inspection of the North Staffordshire Medical Society, upon whom he had operated the preceding June. The tumor was in the lumbar region, attached by ligamentous pedicle or band to space between last dorsal and first lumbar vertebræ. Pedicle two inches or more in length. He had punctured the sac and let out a considerable quantity of fluid on several occasions. He placed a silk ligature about the

pedicle, close to the body of the child, tying it, with strict injunctions to loosen it in case convulsions came on. He tightened the ligature daily until July 12, when he removed the dried-up substance. The recovery was rapid and the child remains well.

Dr. John Wilson reported the following operation for spina bifida in the *Glasgow Medical Journal*, November, 1871. Child, two months old; tumor has been several times punctured; upper dorsal vertebra size of half a billiard ball; opened by free longitudinal incision; dressed with carbolized oil and lac plaster. Recovery slow and seemingly doubtful; at the end of two months cicatrization complete. Six months, well.

W. H. Fitch, M.D., reported in the *Chicago Medical Journal*, 1880, a case of spina-bifida cured by excision. Child, one year old; tumor, egg-size, in lumbar region; dissected and ligated base; clear fluid escaped in considerable quantity for nearly two weeks. Slowly improved, and three months later reported well.

Mr. W. Pye reported a case in the *British Medical Journal*, July 9, 1881. Child, eight weeks old; tumor in lumbar region, size of the infant's head; pedicle about the thickness of a man's thumb; tumor covered with skin; chloroformed, pedicle clamped and tumor removed; clamp taken off in four days; slough separated the twelfth day.

In the *Medical Record*, June 16, 1883, Dr. R. T. Hayes, of Rochester, N. Y., reports an interesting case where he followed Mr. Robson's method. Child, nine and one-half weeks old; otherwise of healthy development; tumor in lower dorsal region; at birth one-third size of hen's egg, but had doubled in size; chloroformed with head low. Upon aspiration the child immediately collapsed, but rallied slowly. Opened the sac and dissected the superficial membranes, which were closed by six interrupted catgut sutures. Introduced twenty small grafts of periosteum from a freshly-killed rabbit. Union imperfect. Several ounces of serum drained away during the following days, the sinuses discharging until the

tenth day. Never pus. Three months later the cure is reported satisfactory, with a firm, hard, resistant covering. Dr. Hayes comments upon the operation as follows: "I would add to Mr. Robson's points in operating, first, care in removing a portion of the fluid before free incision as a guide to the degree of tolerance in each case for such a procedure. Second, the careful maintenance throughout the operation, and for some time after of such a position of the patient as will most favor the retention by gravitation of the largest amount possible of the cerebro-spinal fluid. Finally, I would remark the apparent confirmation of the successful application of periosteal grafting in the operation."

In the *British Medical Journal*, January 26, 1884, Mr. Walter Whitehead reported to the Royal Medical and Chirurgical Society an operation for spina bifida at the Manchester Royal Infirmary. "Female, aged twenty-eight years; until twenty-one the tumor gave little discomfort and was small. Grown larger last seven years, and patient suffers severely from headache, vertigo, etc. The tumor reached from three inches above the iliac crest to within an inch of the tip of the coccyx; its circumference was twenty-two inches, its transverse diameter fourteen inches. The tumor was tapped, but the cerebral disturbances were more marked. Refilled and gradually drained until sepsis occurred. On November 3, 1883, the treatment having been continued since July, the tumor was laid open, the pus evacuated, and the cavity loosely packed with iodoform gauze. The wound healed well, and two months later the cavity was completely obliterated and no tenderness or discomfort left."

Mr. Mayo Robson, of Leeds, England, reported in the *Lancet*, April, 1885, a series of cases of spina bifida treated by plastic operation. The first, a child of eight years; large spina bifida in lumbar region; excised sac, except sufficient to cover the opening, which was sutured, as also the skin. Wound healed by primary union. The second, an adult. The cavity was drained for a few days; recovery. The third,

a boy of seven years; a large lumbar spina bifida. Dissected and sutured; primary union.

All of these operations were performed under strict antiseptic precautions, a eucalyptus atmosphere being used instead of the usual spray. Mr. Robson called special attention to the principle of closing the meninges by bringing together two serous surfaces, as in peritoneal surgery; to the great importance of employing the strictest antisepsis; to the value of this method in cases in which other forms of treatment are not available, as when the sac is thin or the opening into the spinal canal is large; to the possibility of transplanting periosteum and its capability of surviving; he thought that periosteum from a recently-amputated limb would give good results. In one case the sac was acutely inflamed, but complete removal with efficient drainage effected a cure.

Dr. E. H. Bradford, of Boston (*Boston Medical and Surgical Journal*, February, 1886), reported the case of an infant of five months. Tumor in the lower cervical region. Operated on by ligation and compression at the base of the sac, with a silver wire introduced subcutaneously. The sac was then excised, and no nerve filaments were found in it. Dressed antiseptically. From the third day there was a slight leakage of serous fluid. Death occurred the fourth day without symptoms of meningitis.

Dr. Thomas Sinclair (*Dublin Journal of Medical Sciences*, March 8, 1886) reported a case treated by excision. Plump, healthy girl, three months old. Small lumbar spina bifida about size and shape of half an egg, opposite dorsal and upper lumbar vertebræ. A thin translucent pedicle, beautifully injected with an open meshwork of bloodvessels, inclosed about half an ounce of clear fluid. Operated September 21, 1885. Cut rapidly around junction of pedicle and skin, but could not remove it on account of a strong fibrous cord attaching its summit to base. He cut through it. Touched skin edges and peripheral parts of base with nitrate of silver. Wound granulated kindly, and patient discharged at the end of one month.

Mr. J. K. Barton (*London Lancet*, October 2, 1886) reported

an interesting case of spina bifida in a child two weeks old. Sac was incised under careful antiseptic precautions, and the flaps drawn together by a double row of sutures. Wound dusted with iodoform, and dressed with iodoform gauze. There was no elevation of temperature, and the union was complete and firm in a week. Discharged in ten days cured, without loss of power in limbs. After writing the report, information had been received of the death of the child in a fit of convulsions.

Dr. Z. H. Evans reports a case of surgical treatment of spina bifida in the *New York Medical Journal*, August 25, 1888, with illustrations before and after the operation. Boy, six years old, in good general health and development, except club-feet. Two sisters of the mother have given birth to children with spina bifida, her child being the fourth in the family. Tumor the size of an orange attached to the second and third lumbar vertebra. In a pus pocket was found a small piece of necrosed bone. Upon dissection the sac led down to an opening the size of a lead pencil to the cleft, which would admit the thumb. The cord was clearly exposed to view. The sac was excised and sutured. The third day there were convulsions, followed by a free discharge of spinal fluid, which continued for three weeks. Cicatrization went on slowly until at the end of three months; the back is entirely free from pain and tenderness. Upon looking up the subject, Dr. Evans meets the long array of surgical authorities opposing the operation, and fails to find the record of any cases submitted to successful surgical treatment. He therefore points with commendable pride to his case as the first on record resulting in a permanent cure.

Dr. E. P. Hurd, of Newburyport, Mass., October 15, 1889, reports a very interesting case of operative treatment. Child, seventeen months old; otherwise healthy. Some months previous he had aspirated a small quantity of fluid for diagnostic purposes. Operation, September 5, assisted by Dr. G. W. Jones, of Cambridge. Tumor size of a large bowl covered the sacral region as far down as the cleft of the

buttocks. Aspirated a pint and a half of fluid as thin and as clear as spring water. A linear incision was made over the tumor, freely exposing the inside of the sac; the cauda, which was spread out over the surface, was traced to an indentation over the last lumbar vertebra, through which a probe was passed into the spinal canal. A considerable portion of the surplus integument with the sac was hastily removed, and the edges of the incision brought together with a continuous catgut suture and covered with flexible collodion. Five days later the wound opened and about a pint of fluid escaped. The following day the wound was opened, the remainder of the sac dissected to its base, and closed with chromicized catgut; deep, continuous sutures were taken from either side in a manner to reinforce and strengthen the covering structures and the wound sealed. "The closing by the chromicized tendon sutures is according to Marcy's plan of dealing with the sac of abdominal hernia, and the stitching of the deep and superficial parts together with a running suture and the final closure of the incision and sealing with collodion are also like his abdominal operation." The recovery was rapid, without incident, and with a firm cicatrix. Recently, Dr. Jones reports that the cure remains perfect.

In the *American Lancet* for 1888, Dr. F. J. Groner reports a case of spina bifida. Child, three months old. Sac three and one-half inches in diameter in the cervical region. Dissected, transfixed with a double catgut ligature, tied, and cut away sac; aseptic care; slight subsequent escape of fluid; union complete the seventh day. Dr. Groner raises the query, why not usually operate under modern aseptic precautions with success?

In the *Lancet* for July, 1884, Dr. Robert Hewson reports a case. Child, two weeks old. Lumbar spina bifida, size of pigeon's egg. First injected with iodine, then clamped pedicle for five days, then excised. Recovery complete.

Dr. J. C. Cockburn, of Minneapolis (*American Journ. of the Medical Sciences*, Aug., 1890, p. 165), reported a case treated by

excision, with recovery. Tumor located over sacrum, resembling in size and shape the larger end of a hen's egg. Operation November 14, 1889, performed aseptically. An elliptical incision was made around tumor, keeping well back into the healthy skin. The dissection was slowly and carefully made down to the spinal column, which was readily reached, except at inferior portion, where a dense, fibrous band or mass connected the tumor and the sacrum. The pedicle was separated from this fibrous band, and the latter cut through. The knife was then raised and the tumer compressed in order to return as much of the spinal fluid as possible within the membranes of the spinal cord, and a stout catgut ligature tied around the pedicle. Sudden failure of respiration followed on tightening the ligature. A trocar was thrust into the tumor, and three fluidounces of cerebro-spinal fluid withdrawn; the sac was cut open, and the cauda equina was found included in the ligature, and the extremity adherent to the dorsal lining of the sac. With the hips elevated, the ligature around the pedicle was quickly cut. The caudal extremities and that portion of the dura to which they were attached were hurriedly dissected from the sac, and an unsuccessful attempt was made to return this mass within the spinal canal. The sac was excised close to the ligature, and the stump returned within the spinal canal. The wound was then closed by deep and superficial catgut sutures, and a braided catgut drainage left in the lower portion of the wound. One month after operation wound was completely healed, cicatrix smooth. April 11, 1890, five months after operation, child healthy, vigorous, and no nervous symptoms.

Mr. J. Stewart reports a case of excision of the sac of spina bifida in the *British Medical Journal* for February 21, 1891. Operation performed by Dr. Alfred Swann. The child was otherwise healthy. The tumor, the size of a hen's egg, was situated in the lower lumbar region; the membranes semi-transparent, the tip of the forefinger easily plugging the opening in the bone. Two flaps of healthy skin were dis-

sected from the sac and a ligature of chromicized catgut placed around the pedicle. After opening the sac and finding no nerves present, he tied his ligature, cut away the sac, and stitched up the flaps; union by first intention.

Dr. R. H. Seelye, of Springfield, Mass., reports in the *Boston Medical and Surgical Journal* for November 1, 1894, the case of a boy, three years old, otherwise healthy, upon whom he operated last May. Tumor over second lumbar vertebra, size of an English walnut at birth, had increased until it measured twenty-two centimetres in circumference. It was dissected to the base, which measured only one hundred and seventy-five millimetres in circumference, and ligatured. Tumor excised and the subjacent parts sutured. Union was primary, and four months after operation there is no return of tumor, no tenderness, and the cure appears complete. No nerve elements were found in the sac. Fluid clear, colorless; specific gravity 1006.

From the above record, Dr. Trowbridge was, undoubtedly, the first to plan deliberately to dissect the sac, open the canal, and treat intelligently the varying conditions, and then close the wound. His first two cases, treated by slow compression, had taught him that by these measures the sac had not taken on adhesive inflammation, although the integuments had sloughed. In closing his article, he commented upon the advisability of operative procedure, and states that about thirty cases of spina bifida had come under his personal observation and study. It does not appear that Dr. Purdy, of New York, who operated nearly twenty years later, knew of the experience of Dr. Trowbridge, but it is very probable. He was the second to publish his experience in dissecting the parts, excising the sac, and closing the wound. Mr. Page's operation, published in 1847, was undertaken only as a secondary consideration, after repeated attempts to cure by elastic compression.

Dr. Sayre operated by transfixing the small pedicle and ligaturing tightly without dissection.

Thus it appears that, in this early formative stage of Amer-

ican surgery, operative measures undertaken for the cure of spina bifida, born from a suggestion of Sir Charles Bell in a preceding generation, were crowned with success, and were as effective as it was possible to make them until applied under the later knowledge which renders aseptic surgery the crowning glory of the present century.

A REPORT OF FOUR ILLUSTRATIVE ABDOMINAL SECTIONS.

By L. S. McMurtry, M.D.,
Louisville.

Clinical reports possess a peculiar value to practitioners of medicine as attesting the absolute results of treatment. The four cases here reported illustrate as many distinct and separate conditions of disease in which none other than radical surgical treatment can avail. The four cases occurred in my practice during one week, the four operations having been performed within six days. In all the cases the indications for operation were absolute and urgent. All four cases passed into easy convalescence without untoward symptoms of any kind, and all have made complete and perfect recovery. In Case IV. the operation was followed by pronounced shock, from which the patient rallied in a few hours. All are now in the enjoyment of perfect health, three months after operation. The object of this report is to illustrate the indications for operation in grave conditions of disease, formerly imperfectly understood, and to demonstrate the safety of operative treatment promptly and thoroughly applied. The profession has been slow to accept the practical truth that the risk of operating in such cases as I will report is incomparably less than that of temporizing by treating symptoms. Among the increased risks to life from delay, the feeble condition of the patient and the complications resulting from rapid tissue changes demand recognition. For convenience I will report the cases in reverse order, beginning with the last case of the group.

CASE I. *Extra-uterine Pregnancy; Rupture; Hemorrhage and Shock.*—Mrs. D., aged twenty-five, on the evening of September 23, while undressing to retire, was attacked by sudden pain in the left iliac region. It did not last long, and was relieved by rest and warm applications. This lady has been married six years, and about two years since suffered a miscarriage with considerable hemorrhage; since that time she had complained of pelvic pain and menstrual irregularity. At the time mentioned she had missed two menstrual periods. On the Wednesday night following she was attacked with violent pain in the same region, much more violent than before, and was given a full dose of morphia hypodermatically, which gave her some relief. On the following morning she got up to empty the bladder, and while doing so fainted, became deathly pale and cold and was seized with nausea and vomiting. The pain was intense, and for several hours she exhibited the symptoms of profound shock and internal hemorrhage—pallor, bloodless lips, surface cold, and pulse rapid, small, and feeble. Under the influence of stimulants freely administered, hot applications to extremities, mustard to epigastrium and atropia hypodermatically, she gradually rallied late in the afternoon. On the following day her abdomen was swollen and tympanitic and very sensitive to the touch. Three days afterward she passed a perfect cast of the uterine cavity. Her pulse ranged about 120, and she had an evening temperature of 101°. This description of her symptoms is a literal extract from a letter written me at the time by her father, himself an experienced practitioner of medicine. Three days later her father wrote that her symptoms were materially improved. The pulse had fallen to about 100, the temperature had come down to normal, and her condition was better in every respect. Still the abdomen was considerably swollen and quite tender in the left iliac region. There was a slight bloody flow from the uterus. These symptoms, it will be observed, correspond with the shutting off of the area of rupture and hemorrhage from the general peritoneum, with arrest of bleeding temporarily by blood-

clot. On Thursday, October 11, she was transported in a carriage to the railroad station, placed in a sleeping-car and brought to the Jennie Casseday Infirmary for Women, in Louisville. She bore the journey well, and reached the infirmary without aggravation of symptoms. She was accompanied by her father and husband, both of whom are physicians. An examination of the pelvis demonstrated that the cavity was choked with effusion. The uterus was pushed to the right and Douglas's pouch and the left lateral space packed. On Saturday morning, October 13, I opened the abdomen and found the pelvic peritoneum filled with blood-clot, which was breaking down; peritonitis was active and progressive. After removing two or three pints of blood-clot I brought up into the incision the left uterine appendage and tied it off close to the uterus. The point where the tube ruptured is very plainly seen, and I herewith present the specimen for your examination. An examination of the uterine appendage on the opposite side demonstrated the existence of chronic salpingitis with adhesions and occlusion of the tube, evidently the result of long-standing chronic inflammation. It was removed. The peritoneal cavity was flushed with several gallons of warm distilled water, a drainage-tube placed, the incision closed and the patient returned to bed. Her convalescence was uninterrupted. Her pulse remained about 100; she suffered no pain; the abdomen remained flat; the bowels were moved on the third day in response to an enema; the drainage ceased by the third day; the tube was removed and convalescence was established without any interruption whatever. She returned home quite well at the end of the fourth week. Drs. Coleman Rogers, Mandeville Thum, and Robert Stuart were present at the operation.

CASE II. *Cholelithiasis; Impaction of Cystic Duct; Cholecystotomy.*—Mrs. B., of Uniontown, Ky., was brought to me by Dr. Norman, a well-known physician of that place, on Wednesday, October 10, 1894. She is fifty-two years of age, of vigorous constitution, and until three years ago

enjoyed uniformly good health. For three years past she has suffered with frequent violent paroxysms of abdominal pain, only imperfectly relieved by large doses of opiates. Her digestion was impaired, she was several times jaundiced, and for several months past her suffering was almost constant. She had been treated by various physicians for various supposed conditions of disease. Dr. Norman some months ago detected a globular tumor in the right hypochondrium which had enlarged steadily. An examination of the tumor gave conclusive evidence that it was an enlarged gall-bladder, and with associated history justified a diagnosis of gall-stones most probably impacted in the cystic or common duct. On Thursday morning, October 11, the day after the patient's arrival at the infirmary, I did cholecystotomy. A vertical incision about three and a half inches long was made immediately over the tumor; firm adhesions were encountered all about the distended gall-bladder. These were carefully separated and the gall-bladder brought up into the incision. A flat sponge was packed underneath so as to protect the peritoneum, and the gall-bladder incised. The gall-bladder was filled by a perfectly clear fluid, a mucoid secretion, characterizing this form of biliary obstruction. After emptying this my finger detected a large stone firmly impacted deep in the cystic duct. I experienced considerable difficulty in removing it. It is well known that the walls of the gall-bladder and its ducts are thin and friable, and hence the utmost delicacy of manipulation must be observed when the duct is stretched by an impacted stone. It is very easy to push it through the thin tissue of the duct. Various forceps have been invented for the removal of stones under these circumstances, some with padded blades for crushing the stone from the outside of the duct. With two fingers introduced within the abdomen and the index finger of the other hand within the gall-bladder, I succeeded in dislodging this large stone without injury to the duct, and removed it. (See illustration.) The further steps of the operation consisted in sewing the incised gall-bladder to the parietal peritoneum of the

incision, introducing a rubber tube into the gall-gladder and closing the incision (except at the central point, where the tube was placed) in the usual manner. In this way the gall-bladder is drained through the abdominal wall. Before the operation was concluded bile began pouring out through the gall-bladder. The patient's convalescence was uninterrupted, being entirely afebrile and requiring no opium or other anodyne. The tube remained in the gall-bladder until the discharge ceased, and the bile followed the normal channel. The opening closed altogether during the fifth week. The patient was entirely and immediately relieved of pain, and is now quite restored to vigorous health.

CASE. III. *Suppurative Salpingitis and Peritonitis.*—L. J., aged twenty-five, referred by Dr. P. F. Barbour, had suffered for several months from pelvic inflammation. The history and symptoms leave no doubt as to the infection being due to gonorrhœa. For seven weeks prior to admission to the infirmary she was very ill with peritonitis. The abdomen was tender and tympanitic, pulse rapid and temperature ranging from 101° F. to 104° F. The suppurative stage was marked by rigors and profuse sweating. Pain was paroxysmal and so severe that morphia was daily and freely used. An examination revealed the characteristic symptoms of suppurative salpingitis and pelvic peritonitis. After free purgation, abdominal section was done October 9th. The pelvic viscera were matted down with adhesive exudate, which being separated allowed pus to flow out of the incision. The Fallopian tubes were distended with pus, the left having ruptured. The tubes were glued to the ovary on each side, and both ovaries had been converted into abscess-sacs. The specimens illustrate the extreme ravages of specific suppurative salpingitis and ovaritis. After thorough enucleation the rotten appendages were tied off close to the uterus. The peritoneum was flushed freely with warm water, a glass drainage-tube placed and the incision closed. The progress of the case was uninterrupted, and convalescence was prompt. Neither morphia nor other opiates were given during conva-

lescence. At the expiration of the third week the patient went to the country, and writes that she is quite well. Drs. Barbour and Rogers, of this city, and Drs. Stuart and Dunn, of Henderson, were present at the operation.

CASE IV. *Post-puerperal Pelvic Inflammation, with Suppuration.*—Age of patient, twenty-one years; confined July 26, 1894, and during convalescence developed peritonitis. After an acute illness of several weeks, during which time she exhibited the symptoms of puerperal peritonitis, the inflammatory process seemed to abate and her condition was hopeful. During the latter part of August her condition was complicated by abscess of the breast, which required incision and gave much distress, at the same time adding to the exhaustion of an already enfeebled condition. I saw the patient in the latter part of September in consultation with the family physician, Dr. Coleman Rogers. For several weeks preceding the condition was one of seeming improvement with recurrent attacks of violent pain, necessitating repeated doses of morphine, accompanied with fever and sweats. These exacerbations undoubtedly marked the invasion of additional areas of peritoneum by the inflammatory process. Dr. Rogers had utilized purgatives, as well as all other non-surgical resources, in the treatment, and requested a consultation with a view to operative interference. An examination disclosed the most extreme and advanced lesions of post-puerperal pelvic inflammation. The uterus was bound down upon the floor of the pelvis, the fundus in Douglas's pouch, and the rectum almost occluded by its pressure. All the pelvic viscera were fixed, being bound by extensive deposits of organized exudate. There was an indistinct sense of fluctuation in the lateral pelvic spaces when the bimanual touch was applied. The patient was pale, feeble and emaciated, racked with daily exacerbations of pain and constant fever.

On October 6, 1894, during the eleventh week of illness, the patient was removed to the infirmary, and on the following morning abdominal section was made. Ether was very cautiously given, and the operation performed as quickly as

thorough and careful work would permit. On opening the abdomen (suprapubic), the omentum was found agglutinated to the intestines, roofing in the pelvic viscera. Releasing this and working a track of cleavage with two fingers through the coils of intestines, the pus freely poured out of the incision. In separating the adhesions at the floor of the pelvis and enucleating the disintegrated tubes and ovaries (applying only gentle force cautiously), my index finger penetrated the uterus. Recognizing this, I forcibly released that organ (observing the utmost care not to open the rectum, to which it was adherent) and brought it up with the suppurating appendages. The body of the uterus was friable, breaking down under slight force; the appendages were mere abscess-sacs. Having separated adhesions so as to release the intestines, I threw a small wire attached to Koeberle's nœud around the cervix uteri and removed the uterus and appendages. The peritoneum was thoroughly douched with several gallons of warm water, a drainage-tube placed, and the incision rapidly closed. The operation was completed in thirty-two minutes. Dr. Guest, the anæsthetist, had already administered stimulants hypodermatically. The patient was put to bed without any pulse that we could detect in the wrist, though the heart was acting with great rapidity. The usual stimulants subcutaneously, with dry heat to the surface and extremities, were persistently applied, and the patient gradually rallied. The pulse was rapid and small for three days, then gradually came down to normal. The drainage-tube was removed on the third day, the nœud came away on the eleventh day, and healing was prompt and complete. The patient rapidly gained strength and flesh, and is now a perfect picture of health. Dr. Coleman Rogers and Dr. T. P. Satterwhite were present at the operation.

PUZZLING POINTS IN LABOR.

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The object of this paper is to elicit a discussion by the fellows of this Association of the merits and demerits of certain procedures in conditions that now and then confront the busy practitioner, more than to express the author's own opinion upon these subjects.

The environments and surroundings of a patient in labor, the available help at hand, and the outlook for after-treatment are modifying influences which no surgeon or general practitioner can ignore. There are many complications in labor which the accoucheur is liable to encounter at any time that must be met and treated promptly. Often they occur in regions remote from skilled assistance, and where it is almost impossible to obtain surgical supplies needed at the time. These emergency cases, arising under varying conditions and circumstances, have suggested the title of this paper.

I have had considerable experience in cases where the conditions were such that delay would seriously imperil the life of the mother, the surroundings indicating clearly that the question was not so much one of ideal surgery as what could be done to save the patient. Only a few years ago craniotomy was thought to be the sole operation that offered a thoroughfare out of the difficulties that the forceps could not relieve. This to some extent has been superseded recently by operations which under certain conditions promise more to the child, if somewhat less to the mother. Craniotomy is a cruel operation, taking away life from one so utterly helpless and

without a voice in the destruction, the doctor thus becoming judge, jury, and executioner. Under certain conditions this is still the right and proper thing to do. But, with the advancement in surgery, wrought by a keener conception of the principles which underlie it, developing such wonderful successes, the conditions now demanding this terrible work are happily diminishing year by year. Only recently a distinguished member of this Association went so far as to advise that under no circumstances ought craniotomy to be performed upon a living child. While I cannot fully subscribe to this opinion, still the conditions necessitating its performance are daily decreasing.

The successes obtained by Sanger's and Porro's operations, and latterly the good resulting from symphysiotomy, have caused these operations to be substituted in many cases for this more barbarous procedure. And yet there are cases where this operation alone would offer the best chances of success, all things considered.

The brilliant successes obtained in these operations, performed for the purpose of saving the child, have been mostly upon subjects whose conditions were previously understood thoroughly, and where every preparation had been made for the anticipated work. Many of the cases thus treated had formerly undergone craniotomy, or at any rate the deformities and other impediments to natural delivery had been well known. Results under such conditions cannot be taken as a guide to that which we should expect from cases with which a physician is suddenly confronted without previous knowledge and for which he has therefore made no special preparations.

All must admit that to do a Porro, a Sanger, or even a symphysiotomy, one must assume a great deal of responsibility and take upon himself much arduous work and anxiety. Only those physicians who live in remote districts and in the smaller towns, where the dread of the knife overshadows all things else, with patient and friends, can realize with what temerity an operation is mentioned. It is far different in larger cities and in more intelligent communities. There the

surgeon would be sustained and commended in his heroic efforts to save both mother and child. The mortality in these cases under the most favorable circumstances is such that no man should undertake them without thoroughly going over all the grounds.

Symphysiotomy is not so extensive an operation as the Cæsarean, nor fraught with so much risk. Still, it is a serious one, and may lead to trouble if not performed carefully and followed with proper after-treatment.

What, then, are the conditions that should guide us in selecting the operation best suited to each individual case? Before attempting to make answer I wish to refer to the conditions incident to location and surroundings. In the Southern States we have a large negro population, a race inured to the poorest and most beggarly environments about their homes. Amongst these the physician is often confronted by obstacles to delivery that require some one of these operations. As an example, to convey an idea of what may be met with at any time in this class in any community, I will cite the following: I was called in consultation to a poor colored woman in labor, a primipara, upon whom the forceps had been used unsuccessfully for four hours. Her bed was a mass of filthy rags, as also her clothing. The house was small, open, and dirty. Squalor and loathsomeness prevailed everywhere. Dusty cobwebs that had not been disturbed for years hung in festoons upon the wall. Four persons inhabited the small room. Fortunately, by turning, I succeeded in delivering the child, and thus was spared a more serious operation. But suppose I had not been successful in this—what measures should I have taken in its stead? What would have been her chances for recovery under a Cæsarean section or even a symphysiotomy? Had I been forced to any other method I should certainly have chosen craniotomy, believing that with care and patience I could have safely gone through with that performance and left my patient in a fair condition for recovery, whereas, with either one of the others, the outlook would have been entirely different. This is a fair sample of one of the

conditions which would indicate that craniotomy would offer the safest means at our command for the patient. A decision must be arrived at in such cases after a careful, conscientious, and intelligent investigation of everything that surrounds us.

If the natural impediments to delivery in any given case are known to the physician before the end of the woman's term of gestation, thus according him time and opportunities to make all necessary preparation, the selection of the operation promising the best results is not difficult. Accurate measurements could be taken of the birth-channel, and arrangements for nursing and after-treatment be thoroughly understood. The physician is ready for the summons and is fully prepared to carry out his formulated plans. But in cases where the conditions are not known to the physician, and he is suddenly confronted by obstacles to delivery which cannot be overcome except by some one of these operations, this decision is not so easily arrived at. The physical condition of the patient, the amount of exhaustion present, the environments, the availability of intelligent assistance, and the outlook for proper after-treatment are factors which must have bearings of the greatest moment in reaching an intelligent decision.

The country physician, far removed from educational centres, cannot possibly arrive at the same conclusions in such a case as his more fortunately situated city brother. He, with no less fortitude and regard for the life of the child and well-being of the mother, but with his limited paraphernalia, could not hope to do a Cæsarean section or symphysiotomy with any prospects of success, except under the rarest circumstances; whereas, the city physician, or specialist, equipped with all that is necessary for such work, and familiar with all its details and able to procure the best assistance at a moment's notice, can safely come to a very different conclusion. Where, therefore, a craniotomy would be proper in the former case, one of the other three operations would be equally so in the latter.

The conclusion at which I thus arrive is that in every case

the particular operation must be selected which promises the best results, all things being considered.

The term Cæsarean section, as heretofore used in this paper, is to be construed in a general sense, including either a Sanger or a Porro.

When operations of any character are found to be necessary for the delivery of a child, either dead or alive, they should be performed as early as possible, thus sparing the woman's powers, and thereby adding to the chances of success. If the mother and child are to have the best prospects of being saved, operation must not be postponed until the patient has become exhausted. There can be no excuse, and there certainly is no reason, for permitting a woman to suffer hour after hour without progress, putting forth all of her strength in a useless endeavor to overcome the impossible, until that exhaustion supervenes from which nothing can save her.

The scope of this paper will not admit of a discussion of the various presentations of the child, whether correct or otherwise. The points I wish to emphasize are: First. The saving of both mother and child, when possible, is the end to be attained above all other considerations. Second. To accomplish this, everything pertaining to the situation or surroundings, and the physical condition of the patient, should be carefully considered. Third. Whenever the impediments to to delivery, from whatever cause, are too great to be overcome by the forceps or by turning, the surroundings and conditions of the patient permitting, symphysiotomy offers the best results with the least traumatism to the mother. Where this is impracticable from any cause, the surroundings and condition of the patient permitting, then the Sanger or Porro operation should be performed. When neither of these operations is practicable, in consequence of conditions or surroundings, then, and only then, should craniotomy be performed.

These, therefore, are my conclusions: First. That craniotomy should never be performed under any circumstances where it can be avoided, with a reasonable hope of saving both mother and child, rather resorting to some other opera-

tion, even though it be a serious one and involving great risk to single or double life. Second. There are cases where craniotomy promises the only reasonable hope of saving the mother. Only a close observer and conscientious physician, alive to all the hopes of a joyous motherhood, and with an honest desire to do his duty to God and his fellow-man, can be capable of judging as between mother and child, when one—the lesser—must be sacrificed for the safety of the other. I have done craniotomy, and may have to encounter its horrors again, but it will be done only as a last resort.

PERINEO-URETHROTOMY AS THE OPERATION OF ELECTION IN DEEP STRICTURES OF LARGE CALIBRE.

By G. Frank Lydston, M.D.,
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The indications for perineal section in urethral stricture in general are pretty well understood by every practical surgeon, hence there is no necessity for a repetition of the principles which guide us in the selection of the operation in the ordinary form of intractable deep stricture. There is one form of stricture, however, which is not frequently diagnosed, but even when diagnosed is not supposed to indicate an operation, which is considered a formidable one, often justly so considered it must be confessed. I refer to linear strictures of large calibre occurring at or posterior to the bulbo-membranous junction. Intractable strictures in this locality should be made to bear a large amount of the obloquy which is heaped upon spasmodic strictures, chronic prostatic irritation, localized chronic inflammation at the bulb, posterior urethritis, etc., etc. Every surgeon is familiar with the usual form of gonorrhœal or traumatic stricture in this location, but few recognize the irritable, resilient, large-calibred linear stricture which is at present under consideration as worthy of special attention, if indeed they discover it at all. This variety of stricture is of quite large calibre as a rule, but it is exceedingly resilient and elastic, and markedly irritable. It will usually admit a good-sized sound, with some pain it is true, in most instances; but this pain is generally referred to a tender membranous or prostatic urethra, which may or may

not coexist. Behind this relatively slight coarctation chronic inflammation always exists; infectious material—the product of microbial evolution—is always present. Drainage is never secured because of the normal tonus of the cut-off muscle. A certain residuum of urine in a condition of decomposition is practically always present. The impediment to drainage is enhanced by the existence of chronic spasm of the musculo-membranous region and the surrounding muscle group. The impediment to drainage is much greater than would be supposed from the size of the sound which the stricture will admit. In many cases it is difficult to convince the patient—and far more difficult to convince his physician—that an organic stricture exists, because, forsooth, the urethra has apparently been gradually dilated up to its full size by sounds. The symptoms, however, are not relieved, and marked so-called vesical irritability may persist or, more than likely, grow worse under the sounding. Chill and fever are by no means infrequent concomitants. Urethrorrhagia is occasionally observed. There is but one way in which the diagnosis is practicable, namely, by the use of the *bougie exploratrice* of Guyon. This is a flexible rubber affair with a comparatively hard bulb, presenting an abrupt shoulder. With this instrument a distinct snap can be appreciated as the shoulder is withdrawn. It is sometimes even perceptible to the ear of the patient, and always manifests itself to him by the sensation produced in the urethra in the withdrawal of the instrument. Upon the shoulder of the instrument will be found the characteristic, pasty, microb-bearing toxic secretion which forms behind the point of contraction. The pain and tenderness excited by this manœuvre are excellently well localized. Indeed, the localization of the pathological urethral area is far more accurate than is possible with the urethroscope. Because of the reflex spasmodic contraction of the deep urethra under instrumentation, it is possible to detect strictures of the kind which I am describing with a very small exploring bulb. It will be found rather difficult to get a bulb of even moderately large size through the irritable co-

arctation. Where lesions in the anterior urethra coexist, the pain, tenderness, and spasm incidental to exploration of the deep urethra are greatly enhanced. It must be understood at this juncture that the changes in the mucous membrane, as demonstrated by the pain, tenderness, spasm, and muco-purulent secretion developed by exploration, are greatly in excess of what might be expected from the amount of injury or organic narrowing of the canal. The same must be said of the greatly increased frequency of micturition. This is not difficult of explanation when we take into consideration the anatomy and physiology of the region involved. A severe urethrismus, reflexly excited by the inflamed and contractured area, reacts mechanically upon the sensitive tissues and still further increases the pathological conditions present. Another important factor is the imperfect drainage produced by the spasm. The close proximity of the lesion to the bladder, prostatic urethra, and the mouths of the ejaculatory duct is a constant menace to the bladder, posterior urethra and testes, and even the kidneys. In fact, the lesion under consideration is of all others the most likely to produce infective inflammation in these structures. I find that the cases in question are variously classified by the different physicians through whose hands they have generally passed before coming under my observation. In a general way they may be tabulated as follows:

1. Cases under treatment for chronic anterior urethritis. In these cases there really exists some anterior lesion in many instances.

2. Cases which have been sounded, injected, and endoscoped, *ad nauseam*, for the purpose of curing a posterior urethritis, which happens to be the prevailing fad.

3. Cases diagnosed and treated as chronic cystitis.

4. Cases in which no effort is made to ascertain the ultimate cause, the patient having been treated for recurrent inflammation.

5. Cases under treatment for deep organic or spasmodic stricture, a diagnosis of which has been based entirely upon

deep urethral irritation, associated with a certain degree of obstruction to the passage of the sound, and, perhaps, occasionally spasmodic retention of urine.

So frequent is the condition under consideration that I am always suspicious of its existence in cases in which the deep urethra resents the passage of the sound. In very many cases the sound passes with moderate facility, but the symptoms of vesical irritation and abdominal discomfort are either exaggerated or, at least, not at all benefited by the treatment. I have already alluded to urethral chill, but will reinforce what I have already said by the assertion that a large-calibred resilient stricture of the deep urethra is the condition, *par excellence,* which is likely to give rise to chill and fever from the simple passage of the steel sound. Stretching of the extremely sensitive stricture band and disturbance of the septic area give rise to sepsis and shock, which could hardly fail to develop a chill and fever of greater or less severity. In some cases secondary infection occurs, with quite serious results. I have at present under my charge a physician who developed perineal abscess and urinary fistulæ some years ago, for which no cause could be found. He used a No. 28 French sound, and the more he used it the worse he grew. After four years' duration of recurrent abscesses and fistulæ, during which time he was in the hands of men of great skill, he presented himself with the story that he had never had symptoms of deep stricture, but had been cut for anterior strictures. I found that a No. 30 French entered the bladder, with some pain, it is true, but with comparatively little difficulty. With a No. 20 Guyon's bulb, however, I succeeded in demonstrating a distinct narrow band at the bulbo-membranous junction. Here was the explanation of the trouble. The idiopathic theory of urinary abscess promptly went to the wall in the light of the history of an almost forgotten gonorrhœa and the presence of an actual organic contraction of the deep urethra. Perineal section was suggested and performed, with complete success. Be it remarked at this juncture that the same patient could not have been convinced of

the necessity for operation had he not already exhausted all other methods of treatment. If it had been a more recent case and he had consulted others after myself, I have no doubt that he would have been informed by some of my *confrères* that to propose operation would be preposterous, if not criminal. As proof of the accuracy of his opinion, the doctor would have flourished a good-sized sound before the patient's admiring gaze as an evidence of his urethral capacity. I hope some good genius will one day succeed in convincing such diagnosticians that the calibre of the pathological urethra, with the sound *in situ*, is not always a fair criterion of its calibre when the sound is out. Especially is this true of the elastic, resilient, cord-like stricture under consideration. With regard to the treatment of these lesions there is but one method worthy of consideration, namely, the perineal *boutonniere*, division of the band, antiseptic flushing of the infected area, and more or less prolonged drainage. Subsequent sounding completes the cure. I maintain that this operation is logical, safe, and likely to secure a radical cure. From the standpoint of the possibility of shock and sepsis, a radical operation *via* the perineum is infinitely safer than divulsion, internal urethrotomy, or even gradual dilatation with sounds.

In conclusion, I would respectfully request—nay, implore—the general practitioner, and even the general surgeon, to cease considering the sound as the crucial diagnostic test. They may be assured that the sound is of no value in the diagnosis, and worse than useless in the treatment of such cases. I would also respectfully ask the endoscopist to remember that the condition which I have described can neither be accurately diagnosed nor successfully treated by endoscopy in the majority of cases. Let us render unto Cæsar those things which are Cæsar's, and cease demanding impossibilities of those exceedingly valuable instruments—the sound and the urethral endoscope.

INDEX.

Abdominal section, 83
Abdominal sections, four illustrations, 315
Abdominal surgery, plastic work in, 289
Annual address of President, 1
Appendicitis, early operation in, 268
Arteries, ligation of, 219

Baldridge, F. E., 261
Baxter, George A., 132, 178, 229
Brain, action of chloroform on, 112
Breast, cancer of, 234
Breast, carcinoma of, 279
Brown, Bedford, 49, 112

Cancer in breast and uterus, simultaneous appearance of, 234
Carcinoma of breast, 279
Carcinoma of the parturient uterus, 211
Cartledge, A. M., 53, 54, 58, 75, 109, 110, 174
Chloroform, action of, on functions of human brain and spinal cord, 112
Crofford, T. J., 285
Cunningham, R. M., 137, 178, 185

Davis, John D. S., 55, 70, 96, 142, 154, 174, 229, 242, 243
Davis, W. E. B., 54, 74, 82, 85, 109, 110, 155, 176, 182, 184, 250
Dean, George R., 322
Diaphragm, hernia of, 77
Douglas, Richard, 50, 72, 107, 156, 160, 186, 251

Earnest, J. G., 176, 209, 255, 258
Engelmann, George J., 47, 106, 187, 209, 230
Evans, James, 234

FIBROID tumor, intra-uterine, 259
Fibroid tumor of uterus with suppurating ovary discharging by the rectum, 245

GALVANO-PUNCTURE, treatment of nævus by, 91
Gaston, J. McFadden, 268
Gonorrhœa in women, 39
Gunshot wound of spleen and kidney, 83

HAGGARD, W. D., 55
Hall, Rufus B., 71, 105, 183, 205, 208, 217, 230, 245, 252, 257
Hemorrhage, acute, subcutaneous injections of liquids in, 285
Hernia of the diaphragm, 77
Holmes, J. B. S., 39, 52, 54, 57
Hydro-pyonephrosis, 138
Hysterectomy, vaginal, 187

INJECTIONS of liquids in acute hemorrhage, 285
Intestinal obstruction, acute, 58
Intra-uterine fibroid tumor by morcellement, removal of, 259

JOHNSTON, GEORGE BEN, 143, 158
Johnson, Joseph Taber, 51, 52, 103, 138, 141, 207, 215, 216, 229

KIDNEY, gunshot wound of, 83
Kidney, movable, 143
Kollock, Cornelius, 1, 75, 136

LABOR, puzzling points in, 322
Laceration, perineal, 98
Lewis, Ernest S., 109, 205, 250
Ligation of arteries, 219
Long, J. W., 289
Lydston, G. Frank, 328

McGUIRE, HUNTER, 56, 105, 110, 134, 136
McMurtry, L. S., 315
McRae, F. W., 68, 77, 81, 82, 96, 136
Marcy, Henry O., 297

Memorial address on Dr. Warren Stone, 6
Miles, Albert B., 6
Movable kidney, 143

Nævus, treatment of, by galvano-puncture, 91
Nash, Herbert M., 68, 70, 75, 131, 156, 229, 238, 242, 259
Nicolson, William P., 53, 91, 227, 243
Noble, George H., 108, 207, 211, 216, 218

Parker, Francis L., 81, 88, 130, 183, 184, 185
Parker, W. E., 239, 242, 244
Pelvic surgery, complicated cases of, 255
Perineal laceration, operation for complete, 98
Perineo-urethrotomy as the operation of election in deep strictures of large calibre, 328
Peritonitis, acute, 160
Plastic operation, in carcinoma of the breast, 279
Plastic work in operations involving the peritoneum, 289
President's annual address, 1
Price, Joseph, 85, 98, 110, 133, 136, 141, 142, 157, 173, 181, 182, 185
Puzzling points in labor, 322

Reminiscences of Dr. J. Marion Sims in Paris, 27
Robinson, W. L., 74, 105, 156, 181, 215, 251

Sections, abdominal, 315
Sims, J. Marion, reminiscences of, 27
Souchon, Edmond, 27
Spina bifida, surgical treatment of, 297
Spleen, gunshot wound of, 83
Stone, Warren, memorial address on, 6
Surgery, abdominal, 289
Surgery, pelvic, 255
Symphysiotomy, 261

Tiffany, Louis McLane, 83, 90, 243

Uterus, cancer of, 234
Uterus, carcinoma of parturient, 211
Uterus, fibroid tumor of, 245

VAGINAL hysterectomy, history of, 187
Varicocele treated by incision and shortening of the scrotum, 239

WILSON, J. T., 279
Women, gonorrhœa in, 39
Wyeth, John A., 81, 87, 134, 136, 137, 154, 180, 219, 231

Date Due

Demco 293-5